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ABSTRACT

Some of the information needed by policy makers faced with deciding whether and where to develop new educational research and development centers is analyzed in this document. The purpose is to provide an assessment of the current relationships among such factors as funding levels, numbers and sizes of centers, sizes of student populations, state taxing efforts, needs for educational development as expressed in results of student achievement tests, population characteristics, and types of research undertaken at centers. While an effort is made to provide information useful in the comparison of costs and benefits, no attempt is made at evaluating the usefulness or effectiveness of the specific research conducted or of the centers themselves. The material is organized to allow analysis of the status of research and development throughout the United States as a whole, within individual states, and across regions, permitting evaluation of the distribution, funding, and research focus of centers in relation to the different geographical areas they can or do serve. The paper also discusses assessment of the need for research and development centers, and examines the notion of equity as it relates to the funding of centers. (PGD)

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A THREE LEVEL ANALYSIS OF THE CONDITION OF EDUCATIONAL R&D IN THE UNITED STATES: NATION, STATE, REGION

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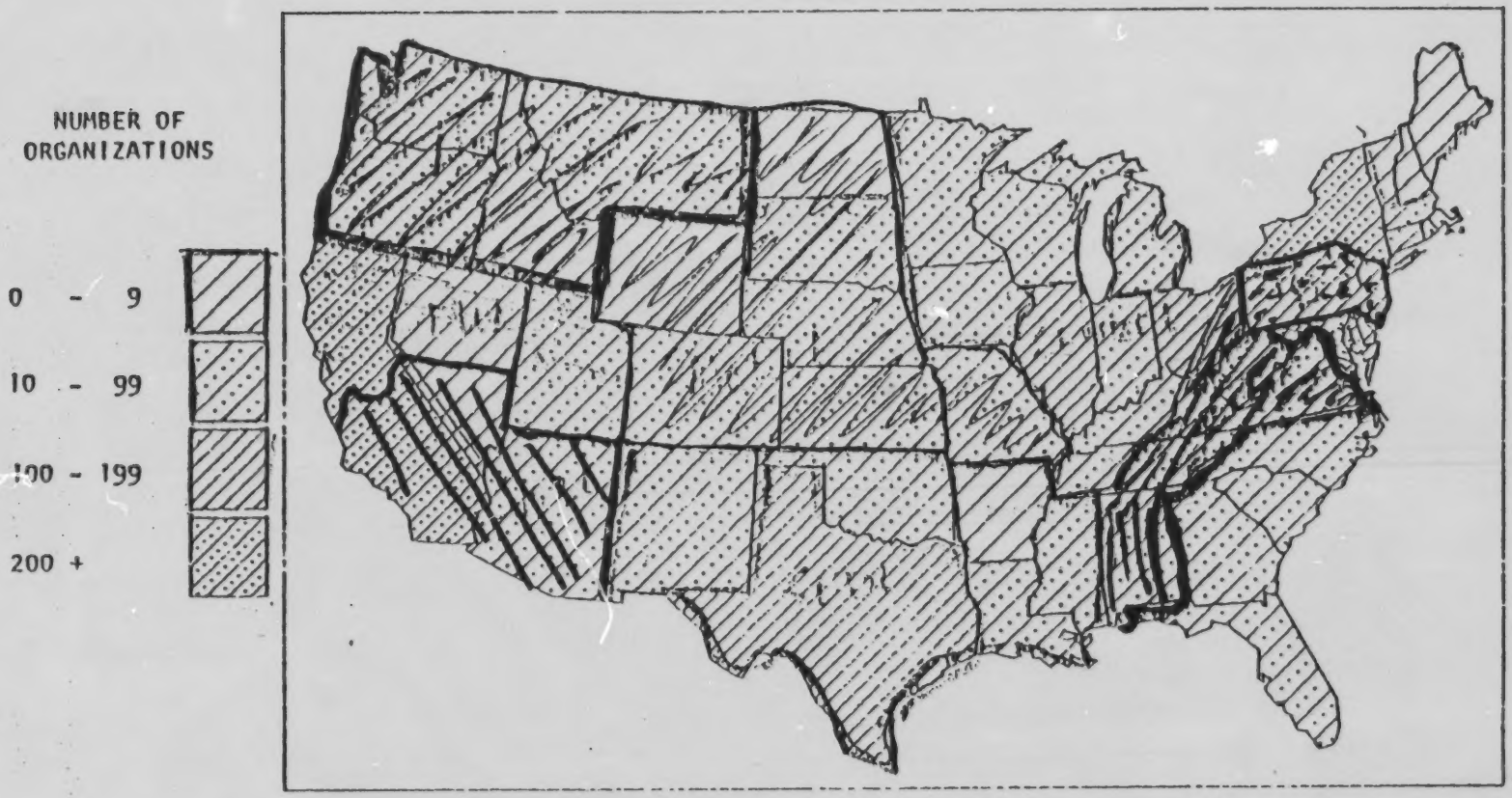
By Michele Warman
Summer Intern EOIS/OD

August, 1980

EA 013 613

THE GEOGRAPHIC DISTRIBUTION OF EDUCATION RDD&E ORGANIZATIONS
IN THE CONTINENTAL UNITED STATES



Source: ARROE Report

INTRODUCTION

The first question that comes to mind when confronted with the problem of choosing whether or not to establish more NIE-sponsored R&D labs and if so where in the U.S. these new labs should be located is simply, "What educational R&D resources exist already and in which areas of the country?" The second question, which follows naturally from the first becomes, "What need is there for educational R&D and how does this need differ from region to region?" A third question concerns the old but important concept of opportunity cost. Put simply, it is the dilemma of choosing which region would benefit the most from additional R&D services based on existing supply and demand. How well the supply of educational R&D in one region meets its demand for the R&D; and how much more successful it is in matching its supply and demand functions than another region is in finding its equilibrium point is the critical question. The theoretical framework of a supply and demand analysis used together with the notion of opportunity cost allows one to compare and contrast regions in order to determine which one is in the greatest need of more assistance.

This paper is designed to stimulate further thought on the issue of equity in funding regional laboratories. It provides policymakers with tools to work with -- numbers, graphs and statistics with which to assess the current condition of educational R&D and it suggests paths of analyses to follow and particular angles from which to address the issue. The information it contains is drawn from a variety of sources -- from interviews with researchers, policymakers and writers in the

field of educational R&D, to collections of figures and charts from databases developed by both private and public agencies. The hope is to put aside for the moment political considerations and to, instead, approach the problem with an economic analysis. Value judgments play an integral role in any form of policymaking, for this reason few conclusions are formed in the paper. Rather, the focus is on presenting material for policymakers to work with, to equip them with a variety of facts and to point the policymaker in an economically-oriented direction.

The first part of the paper begins with a definition of what education research and development is all about and describes how difficult it is to measure the effectiveness of such R&D. Briefly noted are some researchers' views on the worthwhileness of conducting research and development in the field of education and their concern too with the problem of obtaining concrete results. Unlike some other fields of research and development, no one "cure" for educational ills has been found. The variables used throughout the paper are not intended to measure the effectiveness or the accountability of R&D being performed but rather are to be used as indicators of the amount, type and organization of R&D institutions in existence. The purpose of variables like the number of staff members in R&D, the degrees members of the staff hold, the level of funding of organizations, the number of projects underway or the size of the student population being served is not to measure productivity (for they cannot do that), but only to assess the size and character of educational R&D in the United States.

There are three levels of analysis used throughout the report. One level concerns itself with the overall condition of R&D in the United States. An assessment of what R&D is like nationwide is a third order view and one which the paper starts off with. It provides an overview of educational R&D, a giant framework to work within. It is the highest order analysis for it does not look at regions or at individual states but at a much larger unit, a united whole -- a United States. It is important, especially for policymakers on the federal level, to have an understanding of what progress the nation has made in its venture to better its ability to educate its people. It allows policymakers to check the course they are pursuing, to make certain that they are proceeding at the right rate and in the right direction. On an even larger scale, statistics on the progress of educational R&D in the nation permit policymakers to compare the capability of the U.S. as leading educator with that of other countries.

The findings shed light not only on the present condition of education but also on the direction the nation seems to be heading toward in the future. Varying estimates of the total amount of funding of educational R&D are arrived at due to different definitions of R&D used by differing sources of data. Although the figure may not correspond exactly, the numbers offer policymakers some general idea of how many dollars are being devoted to educational R&D. Along with data on the total amount of funding of educational R&D are statistics which put expenditures for R&D into perspective by indicating the percentage of all educational

expenditures actually going towards education R&D. Other indicators of the condition of R&D in the U.S. include estimates of the total number of R&D organizations nationwide, the number of R&D projects in progress, the size of these projects and their average cost.

Gathering facts about what characterizes educational R&D in the U.S. is helpful to policymakers interested in effecting change or in predicting the impact a new policy might have. After reviewing some of the charts presented in the paper, policymakers may feel that a small increase in spending by the public sector may have only a marginal effect, making the cost incurred not worth the effort. Or perhaps after seeing what a small part the Public Education Sector has in funding R&D, the federal government may choose to increase its participation. NIE may take a second look at its decision to be monitor rather than mentor for the regional labs after viewing the areas at which nationwide educational R&D is directed and which areas are being neglected. This part of the paper concludes by raising some questions, presenting factual information on sources of funding and on staffing policies in R&D institutions and by offering some recommendations for updating statistics and for designing new methods or revising old ones in the collection of data on R&D.

The paper then proceeds on to another level of analysis, one more micro-oriented in nature. Its focus is simply on discovering what provisions each of the individual states has made for the performance of educational R&D. It allows the policymakers to compare and

contrast the available resources of one state with those of another. Perhaps a number of large private corporations are located in a particular state and provide a good deal of financial backing for educational R&D, while another state has few such resources. A policy-maker might choose to compensate for this discrepancy by filling the gap in with public funds or perhaps by redistributing already existing funds. With all other things being equal, one state may have the monopoly on large academic institutions well-known for their continual research and development in the field of education while another state may not have such luck. These problems are addressed in this part of the paper. This analysis of estimating the condition of R&D in each state may assist policymakers in determining appropriate funding levels for the states. Data used in conjunction with a multitude of other factors, such as historical, social or political ties that states may share, may assist policymakers in their quest to establish more equitable regional grouping. If one state has a respectable supply of educational R&D funds while another nearby state has very little to work with, economic concerns may dictate a policy of having the two joined together in the same region. From an economic standpoint it may be wise to put weak and strong together in the hope that one will gain a lot while another will lose only a little if the resources are shared. Being able to compare the funding levels of different states may also assist policymakers in their search for more equitable funding practices. An understanding of each state's R&D capability at one point in time may ensure a more equal distribution of R&D resources the second time around.

A number of findings are discussed in the context of this state by state analysis. For one, there are data on both the number of R&D organizations in each state and the size of these organizations. Policymakers may find that in one state there are many small organizations and that what may be needed is to establish one large institution in order to unify the rest. Other data include figures showing both the total amount of funding in each state as well as the total number of students in the state. A simple ratio of the two (total funding/number of students) can give policymakers a basic idea of what the per capita expenditure on R&D is like. They may find, for instance, that one state has a large student population but has few educational R&D resources while another state has fewer students to provide for and much larger means to do it with.

This level of analysis also touches on a number of other important concerns. The types of research being performed in each state are presented to help policymakers better understand the similarities and differences of the educational priorities each state holds. Knowing the areas of research a state engages in provides another important clue to which states would make the best partners in a region. Included in this part as well is a sector analysis which describes the contributions (in terms of dollar expenditures) of academic institutions, local education agencies, intermediary service agencies and private industries. A sector analysis assists policymakers in knowing exactly where they stand and what role they play in the overall scheme of educational R&D within a state.

The state-level analysis concludes with an estimate of what other federal involvement there is in the educational finances of each state. Also, nationwide demographic trends affecting the field of education, how the characteristics and composition of urban centers in the East are changing and the implications such a movement has on state and federal funding levels are briefly considered.

The last unit of analysis examined in this report is the region. This level of analysis is most directly relevant to NIE's problem at hand -- that of rearranging regions and of choosing which combination of states, if any, will receive a newly-sponsored NIE laboratory. This level of analysis is intermediate in scope because it deals not with the U.S. in its entirety, nor with each state individually, but rather with groups of states. By doing so it points to a number of central issues. For one, it outlines the purpose of forming regions and the benefits and drawbacks that accompany having them. It explores briefly the relationship of a regional laboratory with its member states, and how its effectiveness is an inverse function of its distance from a state.

Second, there is discussion of the similarities and differences between regions and the variety of ties necessary to hold states together. Special attention is paid to the different combinations of states NIE is considering grouping together. One such region includes Minnesota, Iowa, Wisconsin and Michigan; another has Illinois, Indiana, Ohio, Kentucky, Tennessee and Missouri in it; a third includes New York, Vermont, New Hampshire, Maine, Massachusetts, Connecticut,

and Rhode Island; and the last contains the states North Carolina, South Carolina, Georgia and Florida. The section assesses the compatibility of the educational R&D resources and of the educational priorities of some states with those of others. This part of the report ends with some notes on the relationship of labs with the regions they serve.

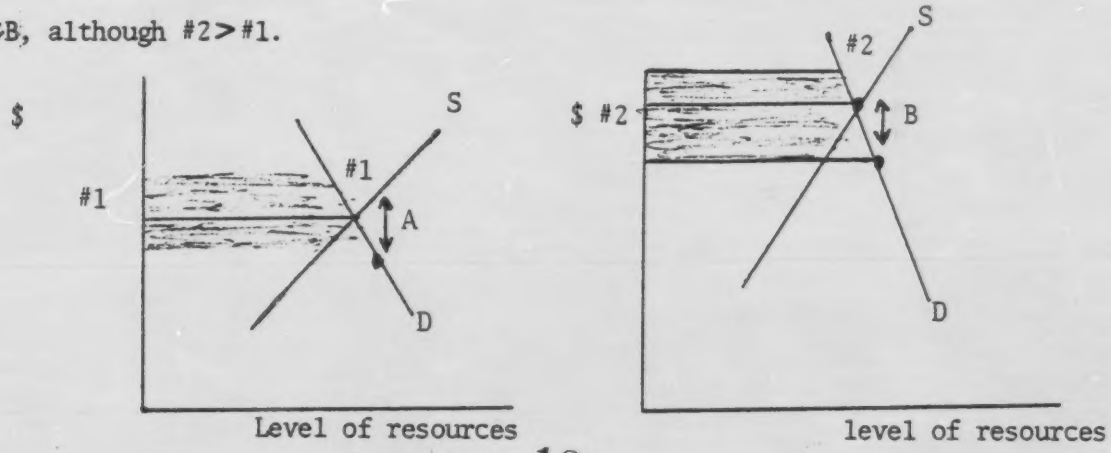
The fourth part of the paper contains facts and discussion about what constitutes the demand side of the equation. How is the need for educational R&D determined? Need assessment is the underlying theme of the section. Demographic trends and student performance on National Educational Assessment Exams are used as indicators, albeit imperfect, of state and regional needs for educational R&D. A number of other indicators are used, including the size and number of school districts, the urban or rural settings within a region, the population and number of major cities and the overall economic condition of the region. The goal is to match up the demand and supply functions and to determine how far away states and regions are from reaching an equilibrium point.

The concluding parts of the paper touch on a number of topics. One focuses on the definition of equity and offers a number of different formulas for computation.

A particular formula models itself after a state-aid equation with a state's wealth, effort and need as the determining factors. Another possibility is to try not to equalize expenditures for R&D amongst the

states but rather to have an all-encompassing "program purchase" system where the state which proposes the most worthwhile projects will receive most of the funding (whether it is for small projects or for million dollar R&D labs). Another suggestion made is for policymakers to determine the minimum amount of dollars each state or region should be spending on educational R&D and to make certain that each state at least reaches that level of funding. This formula involves a system of weighted pupils and of target populations, where unequal monies will go to satisfy unequal needs.

The paper ends with a discussion of the significance of economic analyses and the logic of determining the demand in order to meet it with an appropriate level of supply. The long term goal of policymakers may be to have the supply and demand components meet at their equilibrium point; but meanwhile, the short term analysis may be to permit each region to get as close to its equilibrium point as the next region is to its own. In this manner the equity formula expressed is one in which the supply of educational R&D funding in one region is matched as well with its demand for research and development as are another region's supply and demand functions (although the total amount of funds supplied and demanded might be quite different). That is, that $A \approx B$, although $\#2 > \#1$.



The paper covers a lot of ground, perhaps too much, but the intention is not to come to any earth shaking conclusions but rather to introduce a few concepts and a number of facts, to make a recommendation here and there, and offer some suggestions for future areas of research as well as some different methods of data gathering. In the process of making policy a variety of factors come into play. Decisions are ultimately based both on the policymaker's present perceptions, past experiences, value judgments as well as on some commonsense, factual knowledge and know-how. The hope is that this paper will help shape some present perceptions and provide some factual knowledge that policymakers can make use of in their decisionmaking.

Defining Research and Development

Over ten years ago, the National Center for Educational Research and Development published a comprehensive study of the progress and condition of educational research and development in the United States[1] in which it concluded that data on the subject are sketchy and inadequate. The authors feel that there is an "incompleteness of available estimates of financial support for educational research and development from all sources and a present lack of detail and specificity in analyses of trained manpower for this field... Part of this difficulty," they rationalize "can be traced to problems of conception and definition." Their belief that "more thinking needs to be done relative to the taxonomies to describe educational R&D" holds true today. In addition, their concern over the "absence of any continuing institutional capability or mechanism for the systematic collection of information about educational research and development" is also a problem of today.

A number of different data bases are used in this report. Each has its own particular set of definitions and because of this large discrepancies in fact and figure often occur. As the NCER report points out in 1969 and NIE's Databook mentions again in 1976, there is a great need for a set of standard definitions to be written. This would provide policymakers with more flexibility to compare data collected from a variety of sources and would add a greater degree of accuracy and reliability to the findings. There would be no more worry about comparing apples with oranges. With a great many data bases working

from different conceptual and operational definitions, it is no wonder that researchers are having a difficult time figuring out what R&D resources exist today. One has to pick and choose from a whole array of terms -- from Clark and Guba's expression "Knowledge Production and Utilization,"[2] to "Research, Development, Dissemination and Application," or "Research, Development, Dissemination and Evaluation," before even beginning a discussion.

Although this paper refers to a number of data bases and therefore utilizes a variety of definitions, the one description of R&D which is given the most attention and which is thought of as the most complete is the one presented in Performers of Research and Research Related Fields, a study conducted by the Bureau of Social Science Research (BSSR) from 1976-1978. It breaks down the general label as follows: (p.114)[3]

1. Research--systematic study to establish new facts or principles
2. Development--the disciplined invention, design, or testing of solutions to problems. Development of innovative programs, curricula, and tests was included.
3. Dissemination--activities specifically designed to make R&D results known to interested or potential audiences, including workshops focused on specific innovations and demonstration programs whose aim is to convince, not to test.
4. Evaluation and Policy Studies--systematic inquiries to meet the needs of policymakers and intended to inform their decisions. Assessments of the effects and operations of research and

research-related programs, determination of the feasibility of new programs, and studies focusing on needs and goals, were included.

Data Bases

The two year study on "Performers of Research and Research Related Activities in the Field of Education," conducted by the Bureau of Social Science Research on behalf of the National Institute of Education is the first study that systematically identifies R&D organizations throughout the nation. It attempts to solve the problem that Clark and Guba had noted earlier that "neither the Federal government, nor existing secondary sources (e.g., directories of higher education), nor formal organizations of teacher training agencies... had accumulated a single, comprehensive list" of R&D resources (p.11).[4] The study was intended to be updated every few years, thereby remedying the situation of having out-dated figures--a problem first cited in the Office of Education's report in December, 1969, on R&D in the U.S. Unfortunately, the funding for the updating of such figures was cut off.

The study produced three products, all of which could be quite useful to policymakers. The first is a somewhat thorough listing of R&D institutions in the U.S., entitled "American Registry of Research and and Research-Related Organizations in Education." The second, the "Directory," is a computerized data base which contains a list of

each organization's R&D staffing, funding and areas of research. The third product of the study and one which is referred to throughout this paper is a report containing aggregated data on R&D in the U.S.

This study, which surveyed over 6,000 organizations by mail and by phone and overall had a response rate ranging from 60% to 95%, has one major drawback. In order to cope with the reluctance of R&D organizations, especially those in the private sector, to give out information about the level of funding, etc., the study includes a "confidential clause," where some responses of organizations are kept secret. Because of this some organizations are only included in the aggregate estimates and are not part of either the state or regional breakdown of the R&D funding listed in the "Directory." Little over 25% of the information provided by organizations is included in the statistics concerning the amount of funding, type of organizations and research being conducted in each state. This is an unfortunate situation for it leaves policymakers with but a conjecture of how each state fares in educational R&D. Not having a "confidential clause," no doubt, would create problems as well but perhaps fewer in number than those encountered when providing such as escape hatch.

Another data base referred to in the report and one which for a long time was considered to be the most accurate of all is the National Science Foundation's, An Analysis of Federal R&D Funding by Function, done by NSF's Division of Science Resources Studies. Unlike NIE's Commissioned report, Performers of Research and Research Related Activities in the Field of Education, which scans the universe for R&D

organizations of all kinds (large and small), the National Science Foundation concentrates its efforts on singling out large performers. In addition, the Foundation's estimate only includes those organizations receiving Federal funds.

The most critical problem with NSF statistics is that the data by definition are not supposed to include funding for dissemination, evaluation and policy studies. What is both ironic and good indicator of the reliability of NSF data is the fact that the entire budget of NIE is included in the NSF estimate of R&D funding even though NIE actively supports programs engaging in dissemination, evaluation and policy studies. This fact too helps argue the need for a single definition of educational R&D.

Other data bases available and which are referred to only a little in this report include one by the National Center for Education Statistics. These data they collect are not specifically geared towards educational R&D but rather cover a great variety of educational programs. For this reason this data base is not used much in this report. Another data base involved in assessing what R&D resources are available is maintained by the Office of Management and Budget (OMB) and is published in their Special Analyses. The report breaks down the data on education in order to provide a special section on Federally-sponsored programs in educational R&D. NIE's R&D System Studies, technical report #1, 1975 Federal Funding for Educational Knowledge Production and Utilization: A Composite Estimate, by Agency, Using

Four Data Bases[6] mentions a few shortcomings in OMB's data. "By using program level data," it says, "many subsidiary projects which have an educational component are excluded. Some agencies may provide data on themselves, the validity and reliability of the results may be affected by variations in the interpretation of definitions and instructions."[7](p.2)

Two other data bases include one five hundred page study of "social research and related activity" put out by the National Academy of Sciences and a project data bank developed by the Social Research Group of George Washington University under the auspices of the Interagency Panels for Research and Development on Early Childhood and Adolescence. An advantage of the NAS data base is that it includes a detailed classification of KPU functions; however, many of the findings of this 1975 NAS study are outdated. The other data base, one compiled by the Social Research Group of GWU[8] is used frequently in NIE's publication the Databook.[9] Although it also is somewhat outdated it provides data on a project level--thus enabling a policy-maker to take a closer look at what is being done with R&D funds. It only concerns projects, however, that are underway in one of its member agencies (the National Center for Education Statistics and NSF are thus excluded). Although there are a number of data bases available, many of them are either outdated or are too narrow in focus for adequate use by NIE. There is a strong need for a single comprehensive, systematic data base to be established-- a data base with

commonly agreed upon operational definitions and conceptual notions of what constitutes educational R&D. This data base, much as the Bureau of Social Science Research, Inc. had originally planned to do with its survey on existing R&D programs and facilities in the nation, should be updated regularly. In order to assist policymakers, a single, reliable, up-to-date source assessing the condition of R&D in each state and in the nation as a whole should be made available.

Some Feelings about Educational R&D

Regardless of the definition of educational R&D, there is still disagreement over how worthwhile and effective it is. It is perhaps worth pausing here for a moment to share a few concerns expressed by some researchers and to explain the role certain premises play in this paper. Unlike research and development in cancer, for instance, the importance of the discoveries in educational R&D are not always all that apparent. Often the impact of a new, creative curriculum goes unnoticed or its utility is underestimated because of the difficulty involved in measuring its effects.

One can sense the disillusionment that even active participants in educational R&D themselves feel at times about the value of their work when a reknowned Social Scientist like Christopher Jencks is found saying, "Unfortunately, I have pretty much lost whatever faith I once had in educational research making a difference to anyone other than educational researchers..." (p.130)[10] But at the same time,

one is both reassured and provided with more incentive and with a greater sense of purpose after reading a statement like the one Richard E. Schutz makes in his article entitled "The Nature of Educational Development" in the Journal of Research and Development in Education.[11] Here he writes, "I would say, on the whole, that biologists have been inspired... with destroying an artificial sense of mystery... motivated by people like the psysicist Leo Szilard saying, 'Look, I just don't believe that biology is as mysterious as biologists have made it out. I think if you go for some specific thing, you'll be able to find specific answers'..." (?p.86)

Another point well worth making is that basic assumptions made about the effectiveness of educational R&D are important factors in policy-making. The following passage in Educational Research and Development in the U.S. sheds light on this issue. "Consider," it argues, "the differences between assuming that research might ultimately improve education and assuming that it can. Quite different consequences flow from those alternatives in terms of management effort, program level and centrality of priority" (p.188). The authors then rightly add that the definition of "goal" is equally as essential. For example, it says, "The goal could be to maximize the return on the existing level of investment in educational research and development". Or, it could be to expand the resource allocation to R&D at the maximum feasible rate until the level of support reaches a point at which an "optimum relationship" to the operating educational system is

achieved. This might be phrased in terms of building an R&D supporting function for the operating educational system analogous to the scientific enterprise which now supports the practice of medicine in the U.S. (p.188)[12] It is the latter notion of finding some "optimum relationship" or some equilibrium point between educational needs and the fulfillment of such needs that serves as a premise in this paper.

Research and Development Nationwide

Knowing what the present condition of R&D is like in the U.S is important to those policymakers involved in allocating funds for R&D services. In order to make a decision such as whether to increase funding levels for a region or whether to approve a proposal for education R&D in a specific area of study, it is helpful for policymakers to be aware of not only what resources exist already and what areas research and development are being performed in but also what stake a particular region has in the overall funding of R&D in the country. This section is designed to provide data from a number of sources on the condition of nationwide R&D.

TOTAL FUNDING

There are varying estimates of what the total amount of funding going towards education R&D is. Estimates may differ by several hundred million dollars in their estimation, largely because of discrepancies in their operational definitions. Since the definition

by the Bureau of Social Science Research, Inc. (BSSR) (cited previously in this paper) used in its 1979 report, Performers of Research and Research-Related Activities in the Field of Education seems the most complete for NIE's policymaking purposes, the funding information it presents is used most frequently in this paper.

The Bureau of Social Science Research, Inc. arrives at the figure of $735 million per year for the total amount of R&D funding in the United States. This number includes both private and public sector funds. The National Science Foundation's estimate differs tremendously with that of the BSSR's. NSF's estimate of the total "R&D budget authority for education, training, employment, and social services," of federally funded organizations only is $456 million for 1980, reproduced here as Table 1.[13] NSF reports $146 million in funding for "research and general education aids." The National Science Foundation's report includes, in addition, a prediction that R&D support for general education aids will increase by 16 million or close to 11% in 1981 (p.80).

A third source of information depicting the total level of education R&D funding in the states is OMB's publication, The Budget of the U.S. Government. The OMB estimate is that a little over a billion dollars was spent in 1980 for the support of "educational research and development, some cultural activities, and other general education aids." The book also provides an approximation of the percentage of funding of all education activities going towards education R&D. Figure 1 illustrates

R&D budget authority for education, training, employment, and social services

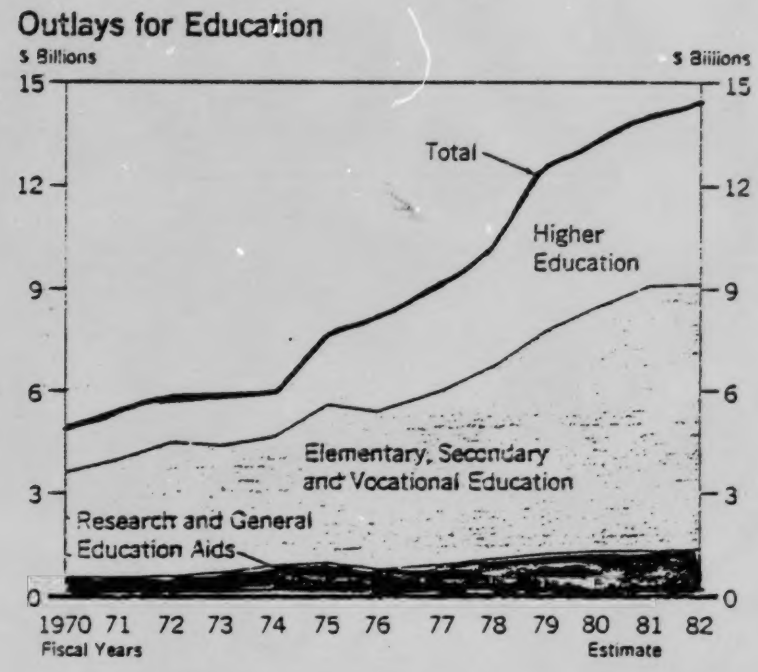
/Dollars in millions/

	1979 actual	1980 Jan. estimate	1980 Proposed reduction	1980 Revised estimate	1981 Jan. estimate	1981 Proposed reduction	1981 Revised estimate
Total	$352	$495	-$39	$456	$637	-$299	$338
Research and general education aids	144	146	-	146	171	-9	162
Office of Elementary and Secondary Education (Educ)	2	5	-	5	6	-	6
Office of Postsecondary Education (Educ)	1	1	-	1	1	-	1
Office of Vocational and Adult Education (Educ)	7	7	-	7	14	-	14
Office of Special Education and Rehabilitation Services: Handicapped research (Educ)	13	13	-	13	13	-	13
Office of Educational Research and Improvement (Educ)	83	79	-	79	91	-9	82
National Institute for Education	81	77	-	77	88	-9	79
National diffusion network	2	2	-	2	3	-	3
General departmental management (Educ)	1	2	-	2	2	-	2
Smithsonian Institution	37	39	-	39	45	-	45
Training and employment	118	257	-39	218	365	-281	84
Employment and Training Admin. (Labor)	118	257	-39	218	365	-281	84
Welfare reform	33	175	-39	136	281	-281	-
Youth program	64	66	-	66	66	-	66
Comprehensive Employment and Training Act (CETA)	15	14	-	14	16	-	16
Work incentive program	2	2	-	2	2	-	2
Unemployment insurance program	5	(a)	-	(a)	(a)	-	(a)
Other labor services	10	9	-	9	9	-	9
Assistant Secretary for Policy, Evaluation, and Research (Labor)	2	2	-	2	2	-	2
Bureau of International Labor Affairs (Labor)	1	1	-	1	1	-	1
Bureau of Labor Standards (Labor)	1	1	-	1	1	-	1
Employment Standards Admin. (Labor)	3	3	-	3	3	-	3
Labor Management Services Admin. (Labor)	3	3	-	3	3	-	3
Social services	80	83	-	83	91	-9	82
Human Development Services (HHS)	49	51	-	51	54	-9	45
Administration for Children, Youth and Families	36	37	-	37	41	-6	35
Head Start	NA	11	-	11	11	-	11
Child welfare R&D	NA	15	-	15	18	-6	12
Child abuse	NA	12	-	12	12	-	12
Administration on Aging	9	9	-	9	7	-1	6
Administration for Native Americans	1	1	-	1	1	-	1
Administration for Public Services	3	4	-	4	5	-2	3
Office of Special Education and Rehabilitation Services National Institute for Handicapped Research (Educ)	32	32	-	32	37	-	37

[a]Less than $500,000.

Source: Federal R&D Funding by Budget Function. Fiscal Years 1979-1981. Division of Science Resource Studies, Nat'l Science Foundation, May 1980

FIGURE 1



Source: The Budget of the United States

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OMB estimates of dollars devoted to education R&D and what percentage these dollars represent of the whole. As Figure 1 points out, a very small percentage of educational funds is devoted to R&D. R&D in education certainly does not carry the same weight today that R&D in other areas does--e.g., defense and medicine. With the recent creation of the Department of Education and with the greater amount of attention being focused on the field of education, policymakers may now wish to attempt to establish a target amount, or to specify a certain percentage of all allowances for education that education R&D should be.

NUMBER OF ORGANIZATIONS

Another estimate concerning nationwide R&D is the number of organizations there are providing education R&D services and in which sectors these organizations are located. The BSSR study finds that the majority of these organizations are located in the academic sector. Twelve hundred and sixty-eight organizations located in four-hundred and twenty-three colleges and universities are reported. Although the number of organizations conducting R&D in education in the public sector is lower than in academia, the number of institutions in which such R&D takes place is greater in number than the number of institutions in the academic sector engaging in R&D. The report finds that 37 State Education Agencies (SEAs), 193 Intermediate Service Agencies (ISAs) and 401 Local Education Agencies (LEAs) are responsible for the R&D being performed in the public sector. The study counts 478 miscellaneous organizations involved in education R&D. In total, the two-year BSSR study, the most complete of any to date, finds that there are 2,434

organizations conducting education R&D in 1,530 institutions throughout the country. It is interesting to note here (although this finding will be discussed in greater detail a little further on in the paper) that over twenty percent of the organizations involved in education R&D are located in just two states (N.Y. and California) and that the five states with the next highest percentages of education R&D organizations concentrated in them, when combined, barely even account for another twenty percent of the total. 1,383 organizations distributed throughout the country account for 57% of all R&D organizations with the other 43% located in only a few states.

FUNDING

The BSSR study also presents useful data on the funding of education R&D. It suggests that close to 50% of all dollar expenditures on R&D is provided by the academic sector which contributes an estimated $373,623,000 a year. The level of funding provided by the public education sector, however, is $118,988,000, roughly fifteen percent of the funding for education R&D. The report suggests that policymakers devote a little more attention to the public sector, for this is where the most amount of development and dissemination is believed to take place. The academic sector, on the other hand, is believed to concentrate more on the research end of education R&D. "All other sectors" are made accountable for the other thirty-three percent of the funding or $243,273,000 worth. In addition, the study finds that

there is a preponderance of small expenditure units involved in the funding of R&D. The following figures show that a large amount of the R&D throughout the country is supported by small funding expenditures from its sponsors.

1. 56% of SEA spent less than $500,000
   72% of SEA spent less than $1,000,000
2. 51% of ISA spent less than $50,000
   90% of ISA spent less than $500,000
3. 65% of LEA spent less than $100,000
   90% of LEA spent less than $500,000
4. 55% of Colleges and Universities spent less than $250,000
   75% of Colleges and Universities spent less than $100,000,000

Table 2 shows that 24% of the 1848 organizations responding indicated that their expenditures were less than $25,000 a year. The chart shows that over half of the respondents (52%) spent less than $100,000 on education R&D. In fact, the funding of nationwide R&D is such that the one hundred and seventy-two largest performers (with expenditures of over a million dollars a year) account for 68% of the total funding. The report finds that less than one third of all organizations are responsible for over 90% of total expenditures! In this manner then, the study indicates that although there are many small expenditure units involved in education R&D, the units which hold the greatest share of all R&D funding are a few large performers located in a few select states. Having a concentration of expenditures in relatively few organizations is

TABLE 2

TABLE IV-20

DISTRIBUTION OF ORGANIZATIONS BY AMOUNT SPENT FOR EDUCATION R&D&E, BY SECTOR

Amount Spent	Sector								TOTAL	
	Public - Small		Public - Large		Private		Academic			
	(N)	%	(N)	%	(N)	%	(N)	%	(N)	%
$24,000 or less	(143)	32	(7)	6	(62)	18	(238)	25	(450)	24
$25,000 - 49,000	(77)	17	(3)	3	(29)	8	(104)	11	(213)	12
$50,000 - 99,000	(87)	20	(11)	10	(49)	14	(145)	15	(292)	16
$100,000 - 149,000	(42)	9	(11)	10	(32)	9	(105)	11	(190)	10
$150,000 - 249,000	(34)	8	(14)	13	(40)	11	(105)	11	(193)	10
$250,000 - 499,000	(39)	9	(34)	32	(47)	13	(91)	10	(211)	11
$500,000 - 999,000	(16)	4	(11)	10	(37)	10	(63)	7	(127)	7
$1,000,000-2,499,000	(6)	1	(12)	11	(33)	9	(63)	7	(114)	6
$2.5 million and over	(0)	0	(4)	4	(25)	7	(29)	3	(58)	3
Number of Organizations Responding	(444)	100	(107)	100	(354)	100	(943)	100	(1848)	100
Number of Missing Cases	(93)		(44)		(124)		(325)		(586)	
Total (N)	(537)		(151)		(478)		(1268)		(2434)	

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considered to be worthwhile by the authors of the BSSR report. It is analogous to having a "critical mass" in chemistry; there is a certain concentration that has to be reached before a reaction will take place. In reply to a Congressional request for thoughts on this issue, Dr. Launor Carter of System Development Corporation in Southern California says:

> The effectiveness of educational research may also be improved by focusing large amounts of support in a few outstanding centers rather than distributing small amounts of research money to large numbers of individual investigations. (Insistence on geographic and institutional distribution of funds dilutes the quality of programs.)[14]

One question policymakers must now address is whether or not the regions in the U.S., especially those served by regional labs, have each obtained that "critical mass." For if they have not, if, for instance, the demands of a region far outweigh the supply of education R&D being provided by the laboratories, then perhaps it would be more beneficial to put additional laboratories in those underserved regions than to establish new regions (e.g., along the East Coast). It might be better to have one region with adequate R&D services than to have two regions with less than satisfactory R&D provisions. But one can also argue, for example, that if one part of the country has relatively nothing, while another area has at least something, it might be wiser to invest

in the area where the returns would be greatest-- the one where the impact of a lab would be felt the most. The answer to the dilemma of choosing whether to add more labs to a region already being served or to create new regions and accompanying regional laboratories all depends on a) whether one accepts the notion of needing a "critical mass" and b) whether one feels that no other form of R&D service can substitute for a regional laboratory. Otherwise, simply calculating what supply and demand is present and determining which alternative would add greater impetus to arriving at an equilibrium would be the more adequate method of solving the problem.

One last finding discussed in the BSSR study and one of great importance to policymakers on the federal level, is that the federal government provides fifty-three percent of all funding for R&D. The federal government plays a critical role in financing R&D in the field of education. Federal policy decisions concerning the supply of funds for education R&D significantly affect the nationwide scenerio of education R&D. Table 3 shows that the federal government supplies 32% of the funding for R&D in small public organizations, with State Governments following close behind by assisting with 28% of the funding. In funding large public organizations, the federal government contributes a hefty 52% of the total funding. The federal government's involvement is even higher in the funding of private organizations, contributing almost 62% of the whole. The largest dollar contribution, however, goes towards supporting education R&D in academic organizations. The total

TABLE V-2

EDUCATION RDD&E FUNDS REPORTED RECEIVED FROM VARIOUS SOURCES, BY SECTOR

p. 103

Source	Sector								TOTAL	
	Public - Small (N)	%	Public - Large (N)	%	Private (N)	%	Academic (N)	%	(N)	%
Federal Government	($ 8,266,000)	32	($29,251,000)	52	($ 84,901,000)	62	($ 97,092,000)	48	($209,510,000)	53
State Government	(7,103,000)	28	(21,226,000)	38	(11,706,000)	8	(33,192,000)	18	(73,226,000)	18
Local Government	(5,287,000)	21	(4,195,000)	7	(3,415,000)	2	(2,361,000)	1	(15,257,000)	4
Private Industry	(82,000)	0	(0)	0	(1,703,000)	1	(3,535,000)	2	(5,320,000)	1
Association.	(188,000)	1	(68,000)	0	(8,967,000)	7	(10,971,000)	6	(20,195,000)	5
Own Funds.	(4,095,000)	16	(1,464,000)	3	(19,309,000)	14	(38,255,000)	21	(63,123,000)	16
Other Source	(553,000)	2	(37,000)	0	(6,702,000)	5	(4,649,000)	3	(11,939,000)	3
Total Funds Reported Received	($25,571,000)	100	($56,241,000)	100	($136,703,000)	100	($180,055,000)	100	($398,570,000)	100
Number of Organizations Responding[a]	(170-173)		(72-73)		(147-156)		(483-487)		(872-887)	
Number of Missing Cases	(12-15)		(37-38)		(38-47)		(95-99)		(182-199)	
Total (N)[b]	(185)		(110)		(194)		(582)		(1363)	

[a]On this table and on subsequent similar tables, the number of organizations responding varies slightly from source to source, since each constituted a separate question on the mail instrument.

[b]Since this table is based on mail questionnaire data, the total N represents only organizations answering by mail.

contribution to education R&D in the academic sector is $87,092,000, 48% of the total funding that academic organizations receive.

STAFFS

The BSSR study's major findings about the nationwide education R&D staff are (p.155):

1. There are approximately 22,000 full-time and 12,000 part-time professional employees who are "primarily involved" in conducting education RDD&E activities.
2. More than half of the full-time staff work in academic institutions, more than a quarter in the private sector, and the rest (15%) in public education agencies.
3. Based on responses from over 90% of the organizations, one-half of the full-time staff have doctorates. Responses from mail questionnaires (representing 40% of the organizations) indicate that about half of the full-time staff also have education as their major area of expertise.
4. Staffs of education RDD&E organizations are generally small. Median full-time professional education RDD&E staff size is "one" in small public education, "two" in academic, "four" in private, and "six" in large public education organizations.
5. Staff size is dramatically larger in organizations with education RDD&E expenditures of $1 million or more. Although they comprise only 7 percent of the organizations, this group employs 30 percent of the full-time professionals. However,

because of the concentration of funds in these large organizations, which account for 68% of all RDD&E expenditures, their utilization of RDD&E professionals is lower than might have been predicted from the expenditure data.

In a report put out in 1975 entitled R&D Funding Policies of the NIE: Review and Recommendations,[15] several conclusions are drawn about the inadequacy of R&D staffing. First, R&D staffs are generally too small. Table 4 indicates that 26% of all the organizations polled said that they had no full-time staff members. Another twenty percent of the organizations said that they had between three and five full-time staff members; and the majority of respondents indicated that they had from zero to two staff members (See Figure 2). A second observation made in the 1975 report on Funding Policies is that "probably every large system must have its own R&D capacity no matter what dissemination networks exist" (p.12) and that, in addition, the people who make up the staff should be "recent Ph.D. graduates and experienced researchers, induced into R&D in education through a variety of fellowship incentives."

The report brings out a view well worth reiterating. It is the belief that there is a limited supply of top-notch, highly qualified researchers in the field of education and that policymakers should concentrate their efforts on pulling together these researchers, rather than spreading them thinly throughout the country. The report, published

TABLE IV-21

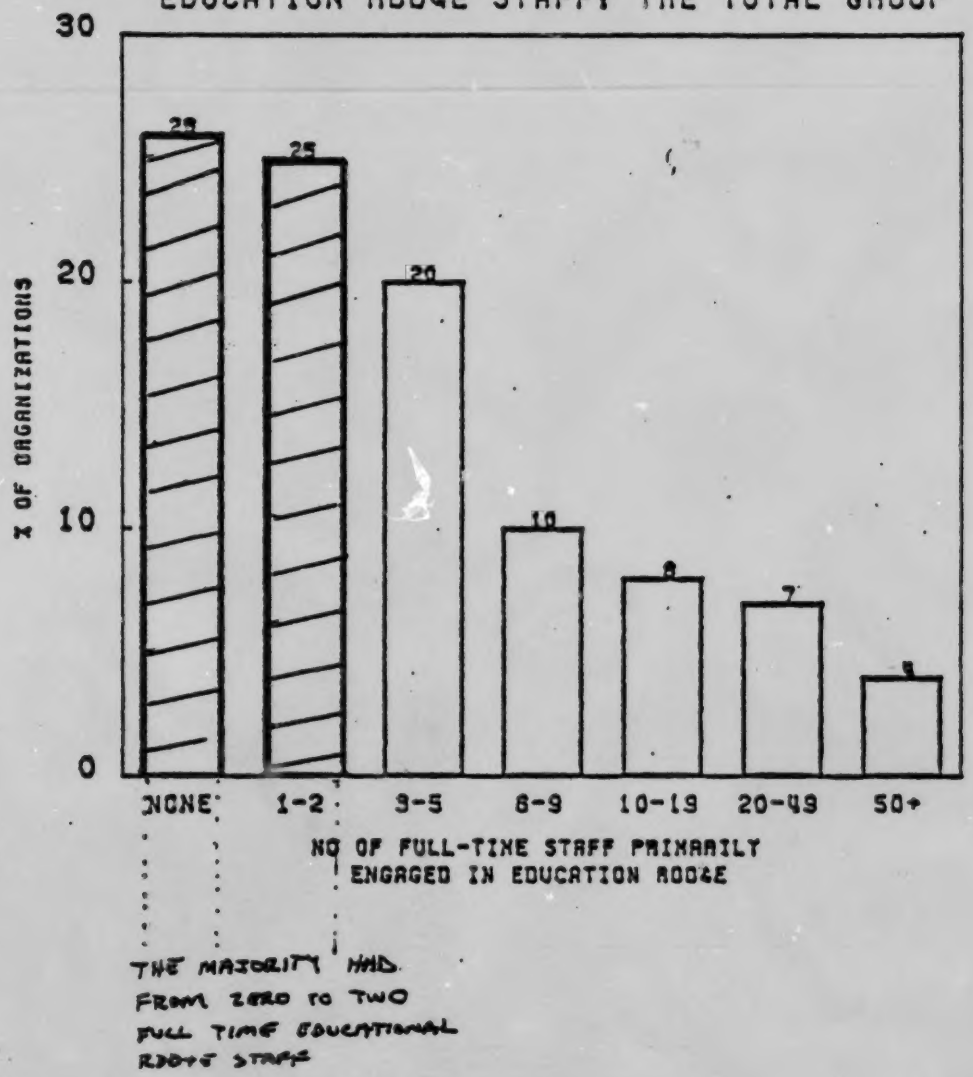
DISTRIBUTION OF ORGANIZATIONS BY SIZE OF FULL-TIME EDUCATION RDD&E STAFF, BY SECTOR

Full-Time Staff Size	Sector								TOTAL	
	Public - Small		Public - Large		Private		Academic			
	(N)	%	(N)	%	(N)	%	(N)	%	(N)	%
0	(159)	30	(7)	5	(85)	19	(366)	30	(617)	26
1	(139)	26	(8)	6	(49)	11	(161)	13	(357)	15
2	(73)	14	(7)	5	(39)	9	(123)	10	(242)	10
3 - 5	(87)	16	(42)	32	(104)	23	(224)	18	(457)	20
6 - 9	(29)	6	(28)	22	(55)	12	(115)	9	(227)	10
10 - 19	(19)	4	(18)	14	(37)	8	(109)	9	(183)	8
20 - 49	(18)	3	(17)	13	(44)	10	(77)	6	(156)	7
50 and over	(4)	1	(3)	2	(34)	8	(44)	4	(85)	4
Number of Organizations Responding	(528)	100	(130)	100	(447)	100	(1219)	100	(2324)	100
Number of Missing Cases	(9)		(21)		(31)		(49)		(110)	
Total (N)	(537)		(151)		(478)		(1268)		(2434)	

FIGURE 2

[redacted]

DISTRIBUTION OF ORGANIZATIONS BY SIZE OF FULL-TIME EDUCATION RD&E STAFF: THE TOTAL GROUP



in 1975, expresses the feeling that the number of education R&D labs in the U.S. should be kept down so that the few that do exist will have both the funds and resources to attract the most able people. As Figure 3 indicates, based on the responses of some 2,289 organizations (94% of those polled), only in the academic sector is there a majority of Ph.D's practicing education R&D. Policymakers should both keep the availability of qualified staff in mind as well as the suggestion made that more Ph.D's be attracted into the field of education R&D, when considering sponsoring additional R&D facilities.

PROJECTS

The final data concerning nationwide R&D include estimates of the number and type of projects currently underway. This information, which is collected in the BSSR report, should enable policymakers to better understand where they stand and perhaps what role they play in the overall scheme of sponsoring R&D projects. Fifty-three percent of all R&D funding comes from the federal level, the vast majority of which goes towards funding projects in the academic sector.

Figure 4 summarizes BSSR's estimates of the number of education R&D projects in progress. Here it suggests that 14,331 out of a total of 26,082 projects reportedly being conducted are being performed in the academic sector. The academic sector is responsible for about 55% of the total projects underway. Next in line, representing a mere 18% of the total number of projects, is the small public sector's sponsorship

FIGURE 3

FIGURE V-5

NUMBER AND PERCENT OF FULL-TIME PROFESSIONAL EDUCATION ADD&E WORKFORCE HOLDING DOCTORATES, BY SECTOR

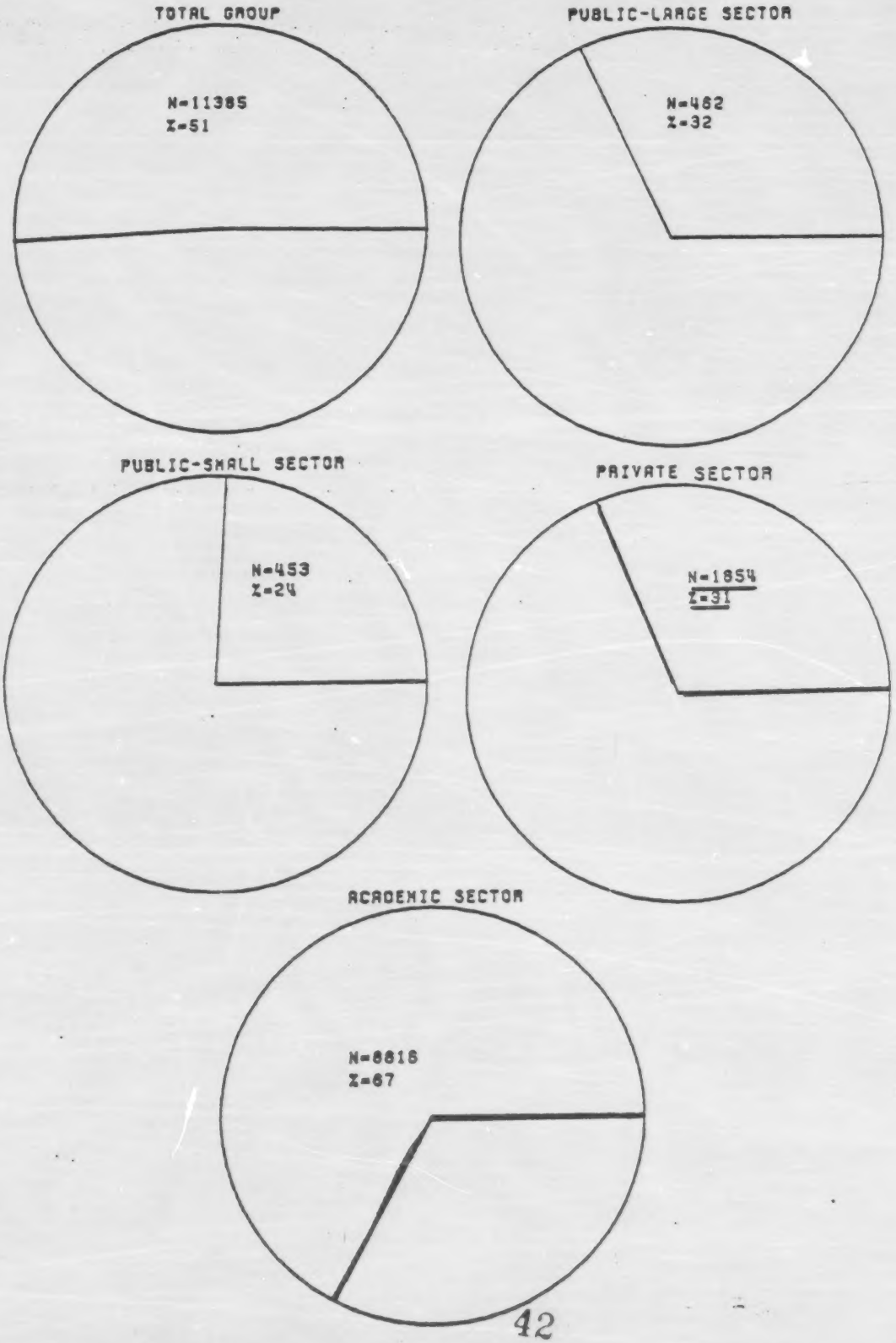


FIGURE V-8

NUMBER OF EDUCATION RDD&E PROJECTS REPORTEDLY CONDUCTED

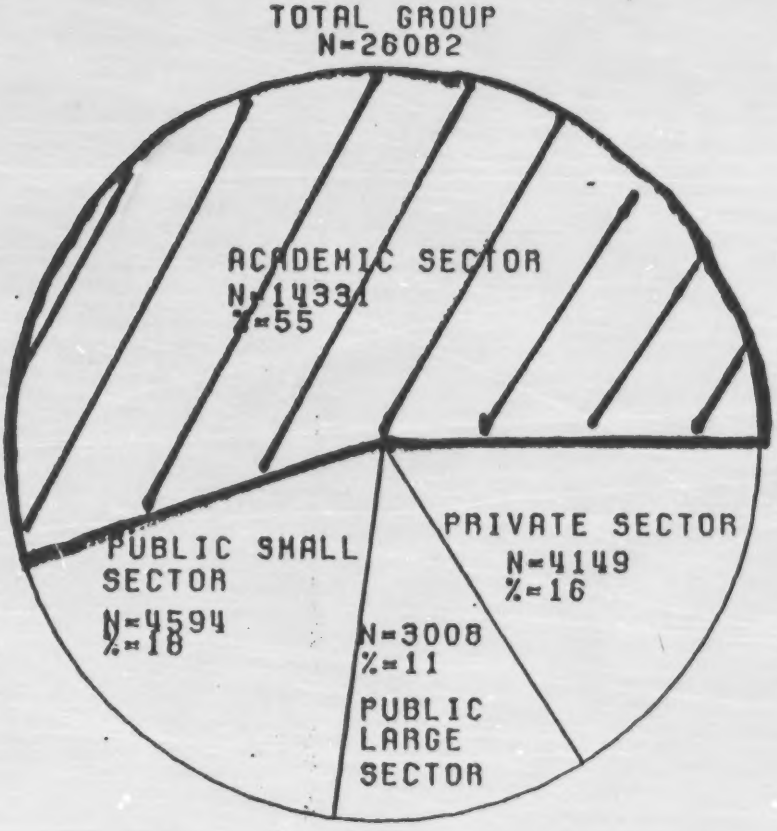


FIGURE 4

BASED ON REPORTS BY 2258 ORGANIZATIONS (93%).

of 4,594 projects. Following close behind is the private sector's 4,149 projects.

The BSSR's study lists the following major findings concerning education R&D projects and "related activities."[16]

1. Approximately 26,000 projects were reportedly conducted by organizations in all sectors, with the number of projects found in any one sector roughly in proportion to the number of organizations in that sector.
2. With the exception of the large public education sector, half of the organizations in each sector conducted less than and half at least three or four projects during their last completed fiscal year. (The "median" number of projects for the large public education organizations was nine.)
3. Based on mail questionnaire responses, the typical project for most organizations was small, with 43 percent reporting that their typical project was $10,000 or less. However, private sector organizations usually had larger projects as the norm; over one-quarter of that group reported typical projects in the $100,000+ range.
4. Not surprisingly, the large ($1 million-plus) organizations conduct more projects than is characteristic of their smaller counterparts. However, typical project sizes are larger only in the private and academic sectors.

5. According to mail questionnaire respondents, the topics towards which large numbers of organizations direct their efforts include: project and program evaluation, basic skills, needs of special target groups (such as gifted, handicapped and bilingual students), demographic analyses, vocational, career, cooperative education, teacher education, education administration and curriculum development. These areas reflect elements of current importance in education, such as the emphasis on providing students with certain minimal competencies and job-related issues and with skills and the concern with equity-related issues and with declining enrollments.
6. About one-half of the group participated in an education-related consortium during their last fiscal year, a finding of potentially great importance in view of the generally small size of the individual organizations.
7. Based on responses from mail questionnaires, the method most commonly used to disseminate the results of RDD&E activities is the research report or monograph. Newsletters and brochures, and R&D meetings and workshops are also commonly used.

This first part of the paper is intended to provide policymakers with a framework to work from. Its purpose is to paint a picture of the education R&D universe, to both point out and comment on some of its characteristics and to make suggestions on ways to improve the "state-of-the-art." The finding that the academic sector receives the largest

percentage of funds may suggest that policymakers determine whether or not too much of the research end of R&D is being performed. Such a finding may indicate, as Joanne Frankell of the BSSR believes is necessary, that more funds be allocated to the public sector where their market is larger than in a college or university's.

Other interesting findings include the facts that a large number of R&D organizations are located in but two states in the U.S.--California and New York, and that funding for education R&D is only a tiny percentage of the funds devoted towards education in general. The discovery of how few full-time staff members for education R&D organizations there are, may suggest to policymakers that a greater number of researchers are needed or rather, those present should be pooled together in order to increase their concentration and their effectiveness. These findings and others are intended to provoke thought on where the nation is in terms of its capacity to perform education R&D, and what direction it is headed in and at what pace.

II. State by State Analysis

An analysis which assesses the condition of education R&D in each of the states of the United States is helpful to policymakers in a number of ways. First of all, it enables policymakers to know what each state's potential for education R&D is like and how well it compares with that of other states. Policymakers are then equipped with tools with which

to compare and contrast the progress of one state in education R&D with the achievements of another. It also allows policymakers to see what impact or effect a certain supply of education R&D has on a state and permits them to take a closer view of the direction a state is headed in. A policymaker is better prepared to assist a state in matching its supply of education R&D with its demand for such services if he/she has a knowledge of what resources are already available.

A policymaker concerned with establishing equity in funding education R&D by state must have a sense of what education R&D exists--how many organizations, what level of funding, how many beneficiaries, etc.-- in each state so as to see who needs what. Before determining what amount of funding a state will receive in the future, it is important to first have not only a good understanding of exactly what the state is presently getting but also what the education R&D appearance is like in other states and what level of funding they may be entitled to in the future. The number of organizations performing education R&D services may, for instance, serve as one variable for deciding how much additional funding of education R&D is needed in a state. It may also assist policymakers interested in establishing equitable educational regions-- where the composition of each region in terms of level of education funding, number of staff involved and number of organizations, is similar.

The following section is designed to point out a few of the characteristics of education R&D in some of the states. It attempts to identify

those states which appear to have a rich supply of education R&D services as well as those states which seem to have very few provisions made for education R&D. It also seeks to point out the similarities and differences not only in funding and in the sources of funding among the states but also in the areas of research and development being explored by the states. If, for instance, most states are performing similar kinds of education R&D, then perhaps there is need for some national coordination or for the establishment of one large education R&D facility to either oversee each state's education R&D operations or perhaps perform some R&D of its own. It is helpful for policymakers to know whether there are some special needs that individual states tend to--whether certain educational interests are unique to particular states. These issues are important ones for policymakers involved in financing specific project proposals, supplying additional education R&D funds and establishing regions--or groups of states--for the performance of education R&D.

GEOGRAPHIC DISTRIBUTION OF EDUCATION R&D ORGANIZATIONS IN THE U.S.

The geographic distribution of education R&D organizations in the United States is such that the two states with the greatest supply of education R&D have also the greatest population and are located at opposite ends of the country. In addition, the half-dozen or so states that have the smallest number of organizations performing education R&D within them are mostly clustered together in both the northwest and

northeast. The majority of states have between ten and ninety-nine organizations performing education R&D; two states have over two hundred such organizations; a half dozen have between zero and nine; and less than a handful have between one hundred and two hundred organizations. Please refer to Map 1 and Table 5, both borrowed from the BSSR study.

It is quite apparent that New York and California have a large supply of education R&D resources. In fact, each state has within its borders over ten percent of the entire pool of education R&D organizations in the country. According to the BSSR data collected, New York has 266 organizations actively involved in conducting education R&D and California has approximately 237. In addition, the BSSR report finds that both New York and California have by far the greatest number of organizations spending one million or more dollars for education R&D. In fact, New York has seventeen such high-spenders and California follows closely behind with fifteen. Another interesting datum about the two leaders in the supply of education R&D is that each is one of the few states in the country that has academic institutions spending over $5,000,000 on education R&D. New York has over $10,000,000 worth of education R&D being conducted by both Columbia University and New York University. California also does well for itself by receiving over five million dollars worth of education R&D services from the work of the California State University at San Jose. California receives another $500,000 in funds for education R&D from its Local Education Agencies; and New York has access to a similar level of funding from an Intermediate Service Agency within its borders.

MAP 1

THE GEOGRAPHIC DISTRIBUTION OF EDUCATION RDD&E ORGANIZATIONS
IN THE CONTINENTAL UNITED STATES

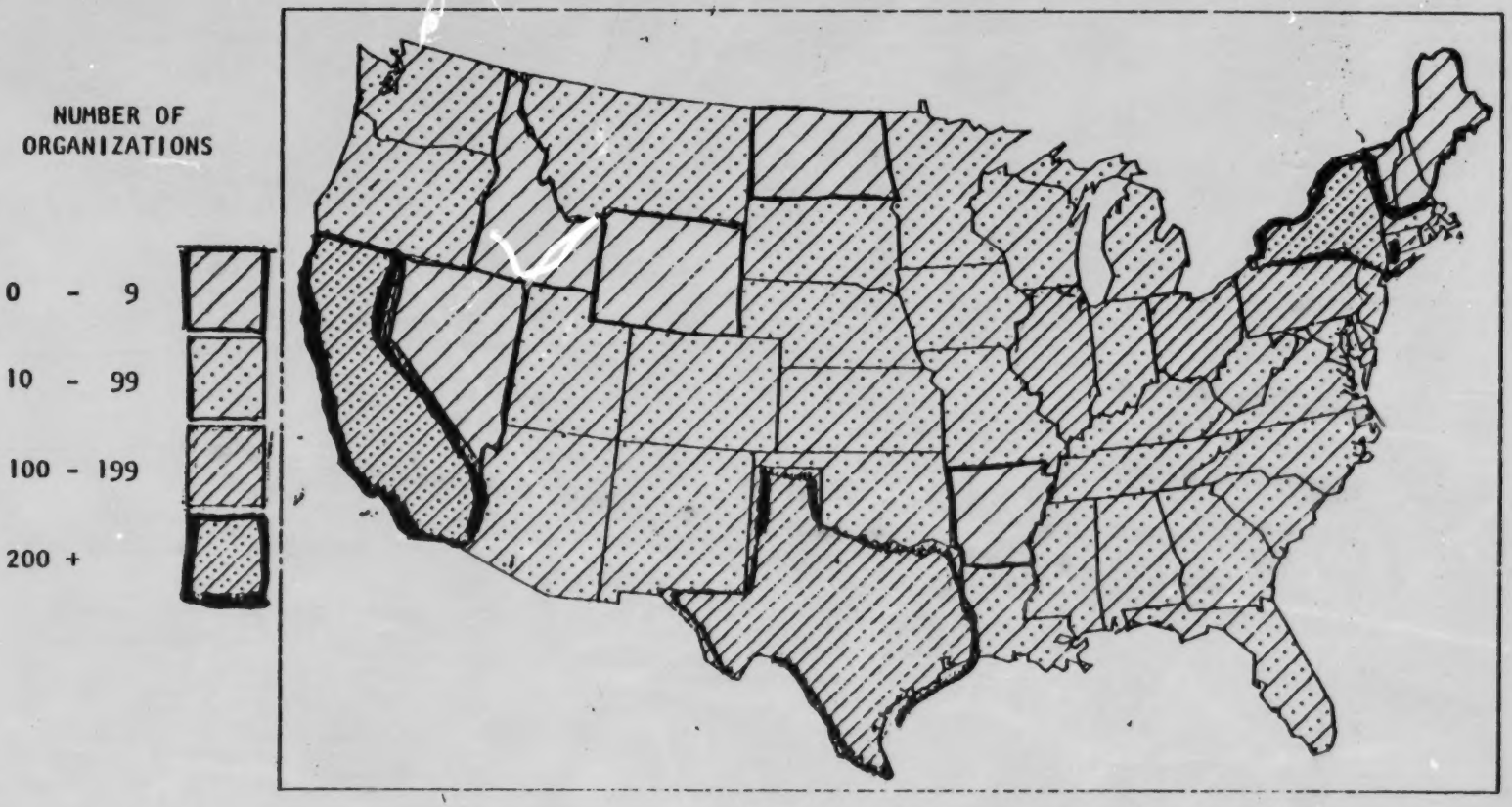


TABLE 5

NUMBER OF ORGANIZATIONS PER STATE

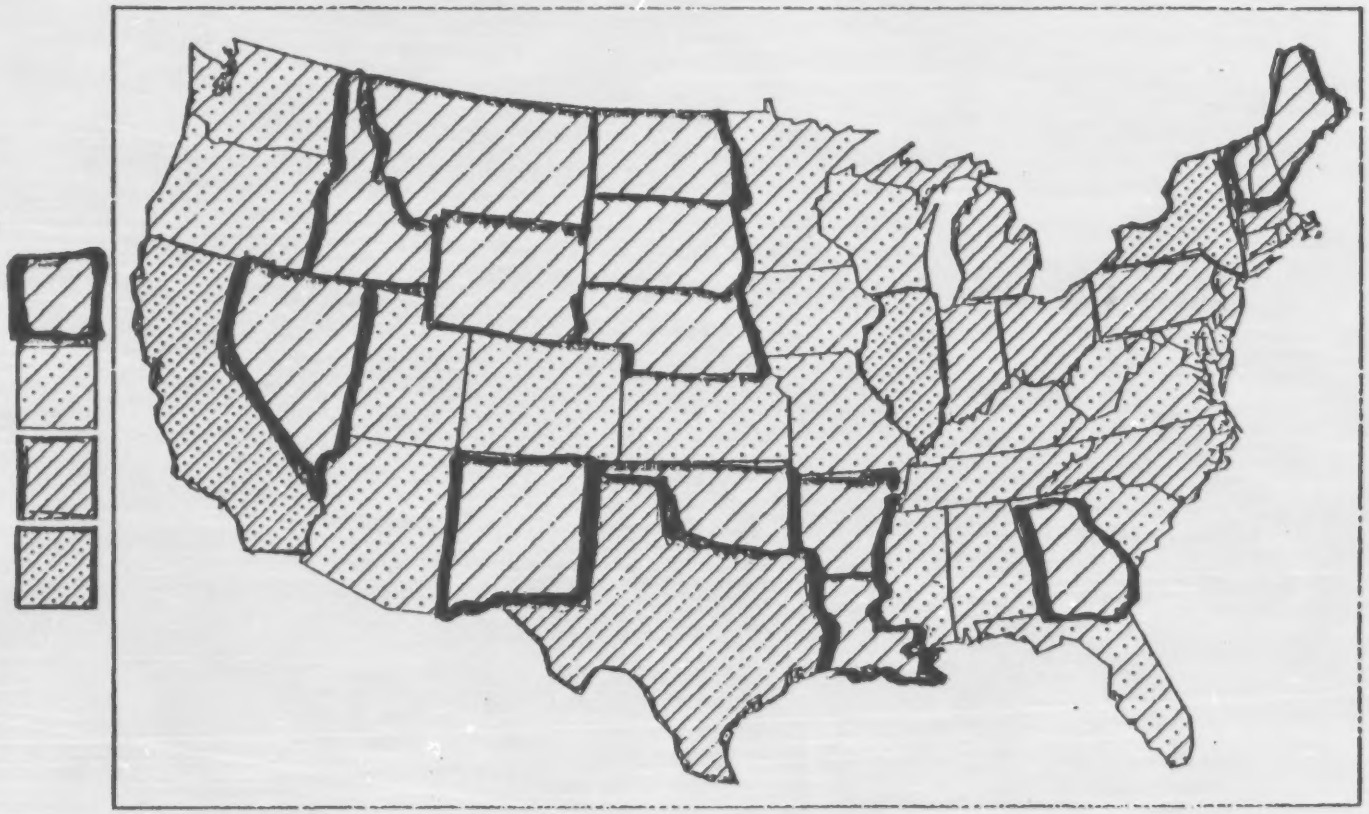
STATE	NO	PCT	CUM.PCT
ALABAMA	50	2.1	2.1
ALASKA	4	0.2	2.2
ARIZONA	26	1.1	3.3
ARKANSAS	8	0.3	3.6
[illegible]	[illegible]	[illegible]	[illegible]
COLORADO	56	2.3	15.7
CONNECTICUT	25	1.0	16.7
DELAWARE	8	0.3	17.0
D.C.	95	3.9	21.0
FLORIDA	76	3.1	24.1
GEORGIA	55	2.3	26.4
HAWAII	1	0.0	26.4
IDAHO	7	0.3	26.7
ILLINOIS	108	4.5	31.2
INDIANA	58	2.4	33.6
IOWA	41	1.7	35.3
KANSAS	29	1.2	36.5
KENTUCKY	26	1.1	37.6
LOUISIANA	25	1.0	38.6
MAINE	8	0.3	38.9
MARYLAND	46	1.9	40.8
MASSACHUSETTS	86	3.6	44.4
MICHIGAN	96	4.0	48.4
MINNESOTA	51	2.1	50.5
MISSISSIPPI	15	0.6	51.1
MISSOURI	47	1.9	53.0
MONTANA	12	0.5	53.5
NEBRASKA	23	1.0	54.5
NEVADA	5	0.2	54.7
NEW HAMPSHIRE	7	0.3	55.0
NORTH DAKOTA	6	0.2	55.2
NEW JERSEY	41	1.7	56.9
NEW MEXICO	13	0.5	57.5
[illegible]	[illegible]	[illegible]	[illegible]
NORTH CAROLINA	47	1.9	70.3
OHIO	139	5.8	76.1
OKLAHOMA	29	1.2	77.3
OREGON	42	1.7	79.0
PENNSYLVANIA	100	4.1	83.2
PUERTO RICO	1	0.0	83.2
RHODE ISLAND	11	0.5	83.7
SOUTH CAROLINA	28	1.2	84.8
SOUTH DAKOTA	10	0.4	85.2
TENNESSEE	36	1.5	86.7
TEXAS	105	4.3	91.1
UTAH	35	1.4	92.5
VIRGINIA	45	1.9	94.4
VIRGIN ISLANDS	1	0.0	94.4
VERMONT	5	0.2	94.6
WASHINGTON	48	2.0	96.6
WEST VIRGINIA	18	0.7	97.4
WYOMING	5	0.2	97.6
WISCONSIN	59	2.4	100.0

Other states with high concentrations of education R&D performers include Illinois with its 108 organizations (4% of the nation's total), Ohio with its 266 organizations (6% of the country's total), Pennsylvania with its 101 organizations (4% of the total) and Texas with its 105 organizations (4% of the total). Illinois and Texas each have a large number of organizations with expenditures of more than a million dollars a year on education R&D. (See Map 2) In addition, Illinois, Ohio and Pennsylvania all have located in them an academic institution spending five million dollars or more for R&D. Pennsylvania also has both a Local Education Association (LEA) and an Intermediate Service Agency (ISA) with expenditures of $500,000 or more for education R&D. Within each of these states, as pictured on Map 1, is a large number of ed. R&D organizations.

The states outlined in red on the map are the ones with fewer than ten organizations located in them. These include Arkansas which has eight (or less than 1% of the nation's total number of performers), Maine, also with eight, Nevada with five, North Dakota with six and Wyoming with five. These states have the smallest number of education R&D organizations. The vast majority of other states have from ten to ninety-nine organizations and are scattered throughout the country.

The concentration of education R&D organizations in only a few states in the country is seen by the fact that when combined, New York, California, Ohio, Illinois, Texas, Pennsylvania and Washington, D.C. have over 43% of all R&D organizations in the country. This distribution,

GEOGRAPHIC DISTRIBUTION OF ORGANIZATIONS SPENDING
$1,000,000 OR MORE FOR EDUCATION RDD&E



54

Total N = 172

Sector Breakdown (State and Number of Organizations)

Public Education		Private		Academic	
New York	(2)	Washington, D.C.	(13)	California	(10)
New Jersey	(2)	New York	(6)	Illinois	(9)
Oregon	(2)	California	(5)	New York	(9)
Pennsylvania	(2)			Texas	(6)
South Carolina	(2)				
Texas	(2)				

55

MAP 2

in part, reflects the large population each of the states has and also, as the BSSR report points out, "reflects the way in which public education is organized within them." Examining both the map of what states ed. R&D organizations are located in and in which sectors (Table 6) one can see that most public education agencies conducting ed. R&D are found in California, New York and Ohio, with 94, 58, and 48 agencies, respectively. But, as the BSSR report rightly suggests, "since it is less dependent upon population, the distribution of organizations in the private and academic sectors is perhaps more interesting. In the private sector, New York, Washington, D.C. and California reign supreme, with 78, 64, and 50 organizations. New York and California also take the lead in the academic sector, having 130 and 93 organizations respectively, followed by Ohio with 80.

All this suggests is that by using only a supply analysis a few states in the country come out ahead in both the amount of education R&D resources they have and the level of funding they get. As mentioned before, this analysis is not complete because it does not include a demand side of the function. In other words, California and New York may have a great number of ed. R&D facilities but at the same time both states have a large number of students to serve, and a variety of educational problems to solve. For this reason they might warrant such a rich supply of ed. R&D organizations. What is being discussed is what they have; policymakers must then go a step further and determine, in addition, what is needed.

PERCENTAGE OF EDUCATION R&D ORGANIZATION BY SECTOR

TABLE 6

State	Sector								TOTAL	
	Public - Small		Public - Large		Private		Academic			
	(N)	%	(N)	%	(N)	%	(N)	%	(N)	%
Alabama	(3)	1	(7)	5	(3)	1	(37)	3	(50)	2
Alaska	(0)	0	(1)	1	(1)	0	(3)	0	(5)	0
American Samoa	(0)	0	(1)	1	(0)	0	(0)	0	(1)	0
Arizona	(8)	2	(1)	1	(9)	2	(8)	1	(26)	1
Arkansas	(1)	0	(1)	1	(3)	1	(3)	0	(8)	0
Colorado	(11)	2	(2)	1	(18)	4	(25)	2	(56)	2
Connecticut	(11)	2	(0)	0	(6)	1	(8)	1	(25)	1
Delaware	(0)	0	(1)	1	(1)	0	(6)	0	(8)	0
District of Columbia	(0)	0	(1)	1	(64)	13	(30)	2	(95)	4
Florida	(10)	2	(10)	7	(8)	2	(51)	4	(79)	3
Georgia	(18)	3	(4)	3	(4)	1	(29)	2	(55)	2
Hawaii	(0)	0	(0)	0	(0)	0	(1)	0	(1)	0
Idaho	(0)	0	(0)	0	(1)	0	(6)	0	(7)	0
Illinois	(18)	3	(3)	2	(25)	5	(62)	5	(108)	4
Indiana	(8)	2	(8)	5	(7)	2	(35)	3	(58)	2
Iowa	(11)	2	(1)	1	(3)	1	(27)	2	(42)	2
Kansas	(1)	0	(2)	1	(4)	1	(22)	2	(29)	1
Kentucky	(2)	0	(1)	1	(3)	1	(21)	2	(27)	1
Louisiana	(9)	2	(5)	3	(0)	0	(12)	1	(26)	1
Maine	(1)	0	(1)	1	(0)	0	(6)	0	(8)	0
Maryland	(2)	0	(11)	7	(14)	3	(20)	2	(47)	2
Massachusetts	(6)	1	(1)	1	(32)	7	(49)	4	(88)	4
Michigan	(34)	6	(0)	0	(7)	2	(55)	4	(96)	4
Minnesota	(9)	2	(1)	1	(8)	2	(33)	3	(51)	2
Mississipi	(2)	0	(1)	1	(3)	1	(9)	1	(15)	0
Missouri	(7)	1	(6)	4	(7)	2	(27)	2	(47)	2
Montana	(1)	0	(1)	1	(1)	0	(9)	1	(12)	0
Nebraska	(8)	2	(0)	0	(0)	0	(15)	1	(23)	1
Nevada	(1)	0	(1)	1	(1)	0	(2)	0	(5)	0
New Hampshire	(0)	0	(1)	1	(1)	0	(5)	0	(7)	0
New Jersey	(16)	3	(3)	2	(11)	2	(11)	1	(41)	2
New Mexico	(0)	0	(1)	1	(7)	2	(5)	0	(13)	0
North Carolina	(7)	1	(2)	1	(6)	1	(33)	3	(48)	2
North Dakota	(0)	0	(1)	1	(2)	0	(3)	0	(6)	0
Ohio	(39)	7	(9)	6	(11)	2	(80)	6	(139)	6
Oklahoma	(3)	1	(3)	2	(4)	1	(19)	2	(29)	1
Oregon	(17)	3	(5)	3	(5)	1	(15)	1	(42)	2
Pennsylvania	(32)	6	(3)	2	(15)	3	(50)	4	(101)	4
Rhode Island	(3)	1	(4)	3	(1)	0	(3)	0	(11)	0
South Carolina	(6)	1	(8)	5	(3)	1	(11)	1	(28)	1
South Dakota	(0)	0	(1)	1	(4)	1	(5)	0	(10)	0
Tennessee	(5)	1	(3)	2	(5)	1	(23)	2	(36)	2
Texas	(35)	6	(9)	6	(7)	2	(54)	4	(105)	4
Utah	(4)	1	(2)	1	(2)	0	(27)	2	(35)	1
Vermont	(2)	0	(1)	1	(1)	0	(5)	0	(9)	0
Virginia	(13)	2	(1)	1	(12)	2	(20)	2	(46)	2
Washington	(15)	3	(3)	2	(6)	1	(24)	2	(48)	2
West Virginia	(5)	1	(1)	1	(1)	0	(11)	1	(18)	1
Wisconsin	(12)	2	(5)	3	(7)	2	(35)	3	(59)	2
Wyoming	(1)	0	(1)	1	(3)	1	(0)	0	(5)	0

Number of Missing Observations = 1

FUNDING

What the total funding of education R&D is like in each state is an important fact to know and one which is difficult to find out. Unfortunately, the BSSR team could secure the responses of only half of the organizations questioned about their level of funding because of the inclusion in the study of the so-called "confidential clause." In addition, what percent of the funds come from the various sources within each state (e.g., business, University, State, Federal) is an even more difficult finding to come by due to this "confidential clause." The figures gathered on this question are based on responses of roughly one organization in four and for this reason are not too reliable. It is important to say, though, that this data should be made available to policymakers: that, although information on funding is provided on the national level, it is needed on a state or regional level as well. When a policymaker is considering whether to add more funds for education R&D in California, he/she is more directly concerned with knowing how many funds California is receiving at present than how many funds education R&D in the U.S., in general, is getting.

Once again, we look at the two leading states in the performance of education R&D. Although the total funds, indicated in Table 7 (Total and Mean Funds for Education R&D and Number of Organizations Reporting by State), are only the responses of a little over 50% of those questioned, they do give some idea of how much funding each state has. New York indicates having a funding level close to that of $65,461,000 with a mean

TOTAL AND MEAN FUNDS FOR EDUCATION R&D, AND NUMBER OF ORGANIZATIONS REPORTING BY STATE
(Dollars in 1000s)

STATE	TOTAL FUNDS	MEAN FUNDS	No
ALABAMA	$ 7,454	$ 266	28
ALASKA	900	450	2
ARIZONA	2,315	129	18
ARKANSAS	305	76	4
[illegible]	[illegible]	[illegible]	[illegible]
COLORADO	20,831	613	34
CONNECTICUT	2,407	160	15
DELAWARE	1,617	404	4
DISTRICT	31,687	674	47
FLORIDA	9,484	221	43
GEORGIA	9,697	323	30
IDAHO	66	17	4
ILLINOIS	30,690	472	65
INDIANA	18,807	607	31
IOWA	2,578	123	21
KANSAS	7,726	386	20
KENTUCKY	3,014	274	11
LOUISIANA	1,372	98	14
MAINE	666	167	4
MARYLAND	8,768	461	19
MASSACHUSETTS	21,876	625	35
MICHIGAN	18,969	332	57
MINNESOTA	14,514	440	33
MISSISSIPPI	773	155	5
MISSOURI	12,665	528	24
MONTANA	510	85	6
NEBRASKA	1,281	99	13
NEVADA	410	137	3
NEW HAMPSHIRE	1,581	264	6
NORTH DAKOTA	563	188	3
NEW JERSEY	21,136	813	26
NEW MEXICO	650	108	6
[illegible]	[illegible]	[illegible]	[illegible]
NORTH CAROLINA	13,679	489	28
OHIO	11,978	171	70
OKLAHOMA	2,812	176	16
OREGON	11,567	399	29
PENNSYLVANIA	19,174	362	53
RHODE ISLAND	1,213	202	6
SOUTH CAROLINA	13,863	1,155	12
SOUTH DAKOTA	266	89	3
TENNESSEE	7,598	380	20
TEXAS	16,004	281	57
UTAH	9,374	586	16
VIRGINIA	8,635	393	22
VIRGIN ISLANDS	100	100	1
VERMONT	323	65	5
WASHINGTON	6,424	279	23
WEST VIRGINIA	2,256	205	11
WYOMING	180	45	4
WISCONSIN	29,706	762	39
TOTALS	$ 530,531	$ 403	1,316

level of approximately $481,000. California follows closely with an estimated level of funding per year of $54,606, and mean funds of $408,000. Vermont, on the other hand, has a 100% response rate of organizations on the funding question and indicates having a total of $323,000 in funding for education R&D, with a mean level of $65. The difference among the states in these rough estimates of total funding is quite large.

This discrepancy in the funding levels of ed. R&D in each state is made apparent once again when viewing the geographic distribution of organizations spending one or more million dollars for education R&D. As Map 2 illustrates, New York and California come out ahead with ten or more ed. R&D organizations spending over a million dollars for ed. R&D. What is also of interest is the sector breakdown. New York indicates having two R&D organizations located in the public education sector, six in the private sector and nine in the academic sector. California has no organizations spending over a million dollars on education R&D located in the public ed. sector and, instead, has five in the private sector and ten in the academic sector. Apparently there is no across-the-board similarity of who is sponsoring million dollar organizations for ed. R&D. In Washington, D.C., for instance, all thirteen million dollar R&D enterprises are located in the private sector. Policymakers should take note of which sectors are responsible for ed. R&D within each of the states in order to assess what control they actually have over the states' ed. R&D capability.

KINDS OF R&D BEING PERFORMED

Tables 8-12 are collections of the findings in the BSSR's computer data base concerning the type of research being performed in each state. Listed under each heading is the number of organizations performing the type of R&D. (An institution can be involved in R&D in more than one area of study). One can see that New York has twenty-six organizations concentrating their efforts on R&D in improving "instructional methods," while only seven organizations are involved in R&D on " psychological aspects of education." New Mexico, on the other hand, has no organizations engaged in R&D in either of these areas. It can also be seen that California has over twice the number of organizations working on R&D in bilingual education (21 in total) as New York (10). But both states concentrate the most resources in R&D on "Project and Program Evaluation."

These tables can be used by policymakers in a number of ways. First, a policymaker can see what areas of study are being given the most attention in each of the states. He/she can then infer as to what some of the educational priorities of each state are. It also gives policymakers an idea of what areas of study the majority of states are interested in. He/she can determine the relative importance an area of R&D has in one state compared to what it has in another state. In Texas, for instance, the amount of R&D in bilingual education is much more substantial than it is in Missouri or New Hampshire. Texas' needs in this area of education R&D are probably much greater than in other states. Policymakers can also draw upon these tables when confronted

PRIMARY AREAS EDUCATION R&D IS DIRECTED TOWARDS

TABLE 8

	Audio-Visual Methods Instruction --	Computer-Assisted Instruction --	Systems Design Instruction --	Methods Instruction -- Bilingual Education	Gifted & Talented Instruction --	Emotionally Handcp. Instruction --	Mentally Handicapped Instruction --	Physically Handicapped Instruction --	Special Pupil Groups Instruction -- Other	Guidance & Counseling	Psychological Aspects of Education
Alabama	1	1	1	3	1	1	2	4	3	2	4	2
Alaska	1	1	0	0	0	0	0	0	0	0	0	0
Arizona	3	2	2	2	6	4	4	5	4	2	7	3
Arkansas	0	0	0	0	0	0	0	0	0	0	0	0
California	8	8	13	18	21	11	14	14	15	9	14	9
Colorado	3	2	1	4	4	2	1	2	2	0	4	1
Connecticut	0	3	2	1	1	5	2	2	2	1	2	0
Delaware	2	2	2	3	2	1	2	1	1	1	0	2
Florida	3	3	5	5	4	0	1	2	2	1	0	1
Georgia	2	0	3	4	1	1	2	2	0	1	1	2
Hawaii	1	1	1	1	1	0	1	1	1	0	1	1
[redacted]	0	0	0	0	0	0	0	0	1	0	0	0
Illinois	8	6	6	9	5	1	3	1	2	2	2	4
Indiana	5	6	5	6	2	6	7	6	6	2	4	2
Iowa	2	2	2	4	1	4	0	1	2	1	3	1
Kansas	2	1	2	4	3	2	6	4	4	0	4	2
Kentucky	3	1	2	4	0	4	3	3	4	4	2	3
Louisiana	1	1	2	2	0	2	1	1	1	1	1	3
Maine	0	0	0	1	0	0	0	1	0	1	2	1
Marvland	2	1	0	1	4	3	7	5	5	3	3	1
Massachusetts	3	4	4	3	4	4	4	5	9	2	5	4
Michigan	4	6	4	6	4	3	6	6	7	5	7	2
Minnesota	5	7	5	9	1	1	2	1	1	1	3	3
Mississippi	0	1	2	2	1	1	1	2	1	0	3	0
Missouri	3	1	1	4	0	1	2	3	0	1	5	1
Montana	1	0	1	3	2	2	2	2	3	1	0	0
Nebraska	1	1	2	3	0	0	2	2	2	0	1	0
Nevada	0	1	0	0	0	0	0	0	0	1	0	0
New Hampshire	1	1	1	2	1	0	0	0	0	0	0	1
New Jersey	0	0	1	3	3	1	1	1	1	1	1	1
New Mexico	0	0	0	0	1	0	1	1	1	0	0	0
New York	9	8	14	26	10	14	21	21	21	6	10	7
North Carolina	3	2	3	4	2	5	3	5	7	3	5	2
North Dakota	0	0	0	0	0	0	1	1	1	0	0	0
Ohio	8	4	7	12	3	6	5	8	7	3	7	1
Oklahoma	2	0	1	0	1	1	0	2	1	0	0	1
Oregon	1	2	4	2	3	3	2	3	2	2	1	0
Pennsylvania	5	8	6	15	6	12	11	12	[redacted]	2	7	9
Rhode Island	0	0	1	1	3	3	1	2	1	0	1	0
South Carolina	0	0	1	2	0	2	2	0	2	1	3	0
South Dakota	0	0	0	0	0	0	0	0	0	0	0	0
Tennessee	1	0	2	2	0	0	1	1	0	0	0	0
Texas	6	5	7	7	12	8	10	7	6	3	9	4
Utah	2	3	2	6	3	1	1	2	2	1	1	3
Vermont	0	0	0	0	0	0	0	0	0	0	0	0
Virginia	1	4	5	7	3	7	7	9	5	2	7	1
Washington	1	5	0	7	1	8	3	6	6	3	4	0
West Virginia	1	0	2	3	0	0	1	3	1	1	2	1
Wisconsin	6	2	4	5	4	5	3	4	4	2	7	8
Wyoming	1	0	0	0	0	0	0	0	0	0	0	0
D.C.	2	3	2	3	3	1	623	5	4	4	3	3

SOURCE: The BSSR Computer Database
NOTE: Institutions can designate more than one area of ed. R&D

TABLE 9

	FACILITIES & EQUIPMENT: ED TECHNOLOGY	ARCHITECTURE DESIGN	AUDIO-VISUAL EQUIPMENT & FACILITIES	COMPUTERS & COMPUTER USE	OTHER FACILITIES -- DEVELOPMENT	GENERAL CURRICULUM DEVELOPMENT	SPECIFIC CURRICULUM DEVELOPMENT	ENGLISH & SPEECH CURRICULA	FINE ARTS CURRICULUM --	FOREIGN LANGUAGES CURRICULUM --	HEALTH & SAFETY CURRICULUM --	MATHEMATICS CURRICULUM --
Alabama	0	1	1	2	1	5	1	0	0	0	0	1
Alaska	0	0	0	1	0	0	0	0	0	0	0	0
Arizona	2	1	1	6	1	7	3	3	1	3	1	3
Arkansas	0	0	0	1	0	2	0	0	0	0	0	0
California	2	2	4	15	3	20	10	15	3	4	3	14
Colorado	0	0	1	0	0	3	1	3	2	2	5	3
Connecticut	0	0	0	4	0	2	0	2	1	3	1	3
Delaware	2	0	1	3	2	4	1	2	0	0	1	1
Florida	2	0	2	4	1	3	1	2	0	0	2	4
Georgia	0	0	0	0	0	3	0	0	0	0	0	1
Hawaii	1	0	1	1	0	1	1	1	1	1	0	1
Idaho	0	1	0	0	0	0	0	0	0	0	0	0
Illinois	3	0	5	7	0	8	3	4	0	1	3	5
Indiana	0	1	3	4	0	7	6	5	3	6	3	7
Iowa	0	0	1	3	0	7	3	4	1	2	1	2
Kansas	1	1	0	1	0	4	1	3	1	1	1	3
Kentucky	0	0	2	4	2	3	0	4	1	1	3	3
Louisiana	1	0	1	3	0	4	1	2	2	1	1	4
Maine	0	0	0	1	0	0	0	0	0	0	1	0
Marvland	0	1	1	5	2	1	1	2	2	0	4	3
Massachusetts	0	0	2	4	2	8	4	2	3	1	3	4
Michigan	1	1	1	6	3	6	1	2	0	0	1	3
Minnesota	1	0	0	5	1	6	3	2	3	3	2	4
Mississippi	0	0	1	1	0	2	0	1	0	0	0	1
Missouri	0	0	2	1	0	3	2	2	1	1	3	3
Montana	1	0	0	2	0	3	1	1	0	0	1	1
Nebraska	0	0	0	1	0	4	4	1	0	0	3	1
Nevada	0	0	0	1	0	0	0	0	0	0	0	2
New Hampshire	1	0	1	1	0	1	0	0	0	0	0	1
New Jersey	0	0	0	2	0	3	1	1	1	1	1	4
New Mexico	0	0	0	1	0	0	0	0	0	0	0	0
New York	2	3	11	12	2	21	7	10	5	5	13	11
North Carolina	1	0	2	5	1	8	1	3	2	1	1	5
North Dakota	0	1	0	0	0	0	1	0	0	0	1	0
Ohio	3	0	3	5	2	13	7	7	3	3	7	7
Oklahoma	2	0	1	1	0	0	0	0	1	0	0	1
Oregon	0	0	1	2	2	2	1	2	1	1	1	4
Pennsylvania	5	0	1	5	1	0	3	6	2	3	2	4
Rhode Island	0	0	0	2	1	0	1	3	2	0	1	1
South Carolina	0	0	1	1	0	2	0	2	1	1	1	2
South Dakota	0	0	0	0	0	0	0	0	0	0	0	0
Tennessee	0	0	0	0	0	0	1	0	0	0	0	1
Texas	1	2	3	6	1	13	6	4	0	1	3	7
Utah	2	0	2	5	0	1	1	3	0	2	2	1
Vermont	0	0	0	0	0	0	0	0	0	0	0	0
Virginia	0	2	1	7	1	7	3	3	0	2	1	4
Washington	0	1	0	2	0	5	3	7	1	3	3	8
West Virginia	0	0	1	1	0	2	1	0	1	0	0	0
Wisconsin	1	0	4	2	0	6	3	2	0	0	2	2
Wyoming	0	0	0	0	0	0	0	1	0	0	0	1
D.C.	2	1	1	4	1	6	3	1	1	1	1	2

TABLE 10

	Sociology -- Occupational Outcomes	Sociology -- Race & Minority Relations	Sociology -- Community Relations	Sociology -- School-Social Aspects	Sociology -- School Finance Economics of Education	Distribution & Organization of Education	Education & Forecasting Enrollment	Personnel & Use Analysis	Project & Program Evaluation Recruit-	Teacher Education	Teacher Performance	Other Administration Planning, Policy
Alabama	1	3	2	3	4	4	3	2	6	5	3	2
Alaska	0	0	0	1	2	1	0	0	1	0	0	0
Arizona	4	4	2	2	4	5	6	6	10	7	4	0
Arkansas	0	0	0	1	0	0	0	0	1	1	1	0
California	11	16	17	0	11	22	18	9	35	18	17	2
Colorado	4	3	5	0	4	6	5	2	4	6	4	0
Connecticut	2	3	3	0	4	4	5	0	6	6	4	1
Delaware	4	3	2	0	3	4	3	3	4	2	2	1
Florida	2	1	5	2	4	4	1	0	4	4	4	2
Georgia	1	2	1	0	1	1	0	1	5	4	5	1
Hawaii	0	1	0	0	1	1	1	1	1	0	1	0
[redacted]	0	0	0	0	0	0	1	0	1	0	1	0
Illinois	3	6	3	1	5	6	5	3	10	8	6	2
Indiana	2	5	3	0	6	7	4	4	6	8	6	0
Iowa	0	2	2	1	1	5	6	0	6	2	4	0
Kansas	2	3	4	1	2	5	4	1	4	4	0	1
Kentucky	3	1	4	2	4	8	4	3	7	4	3	1
Louisiana	1	1	1	0	0	3	2	0	3	4	1	0
Maine	2	0	1	0	0	1	1	0	3	2	2	0
Maryland	3	4	4	2	3	5	4	1	8	4	2	2
Massachusetts	5	9	6	0	6	8	6	1	9	6	6	1
Michigan	4	2	8	0	4	9	7	7	15	6	4	1
Minnesota	4	3	2	1	1	6	3	2	14	6	7	0
Mississippi	1	1	2	0	1	1	2	0	4	0	2	0
Missouri	1	2	2	1	1	4	3	2	3	3	4	1
Montana	2	2	3	0	2	3	1	0	3	2	2	1
Nebraska	0	1	0	0	1	4	1	0	4	2	2	0
Nevada	1	0	1	0	0	1	0	0	1	1	0	0
New Hampshire	0	0	0	0	1	1	1	0	2	1	2	0
New Jersey	1	0	1	0	2	2	2	2	6	2	0	2
New Mexico	0	0	0	0	1	1	1	0	1	0	1	0
New York	10	11	14	6	16	27	21	10	27	26	24	1
North Carolina	6	4	4	3	2	4	3	1	12	3	4	2
North Dakota	0	0	0	0	1	1	1	1	1	1	0	0
Ohio	5	4	5	1	3	10	6	3	16	14	10	3
Oklahoma	1	1	0	0	0	1	1	1	2	2	1	1
Oregon	2	2	5	0	3	6	3	1	8	3	2	1
Pennsylvania	6	7	8	2	5	9	11	3	16	11	10	3
Rhode Island	1	1	1	0	1	1	1	0	4	0	1	0
South Carolina	1	1	1	0	1	2	1	0	4	1	1	1
South Dakota	0	0	0	0	1	0	1	0	1	0	0	0
Tennessee	0	0	0	0	0	0	0	0	1	2	1	0
Texas	7	8	7	2	4	11	8	4	21	14	12	4
Utah	0	1	0	1	0	2	0	1	4	4	5	0
Vermont	0	0	0	0	0	0	0	0	0	0	0	0
Virginia	2	5	4	1	3	10	6	3	13	8	4	1
Washington	2	2	4	0	2	1	3	0	9	3	4	0
West Virginia	1	0	1	0	0	0	1	0	4	3	1	0
Wisconsin	6	3	0	2	4	5	3	2	9	7	8	1
Wyoming	0	0	1	1	0	1	1	0	2	0	1	0
D.C.	8	7	7	2	6	13	12	5	16	6	7	5

TABLE 11

	Attitudinal Motivational Studies	Child and Adolescent Development	Learning/Academic Outcomes/Performance	Psychometrics, Tests and Measurement and Psychology and Learning	Talent + Creativity	Psychology — Other Aspects	Psychology — Social Aspects of Education	Sociology — Demographic Analyses	Sociology — Delinquency, Discipline Security	Sociology — Classroom, Climate	Sociology — Environmental Conditions
Alabama	2	1	3	2	1	0	0	3	6	1	2	1
Alaska	0	0	0	0	0	0	0	0	0	0	0	0
Arizona	5	1	6	1	5	3	0	1	5	1	5	4
Arkansas	0	1	0	0	0	0	0	0	0	0	0	0
California	16	8	21	10	16	2	3	5	17	4	12	8
Colorado	4	3	4	1	4	2	1	1	4	3	4	3
Connecticut	4	0	6	1	4	3	1	1	4	1	3	3
Delaware	2	1	3	2	3	2	0	2	4	0	3	3
Florida	3	1	7	2	3	0	0	1	1	1	3	0
Georgia	2	3	5	2	3	2	0	1	1	1	4	2
Hawaii	1	1	1	1	1	1	0	1	5	1	0	1
Idaho	1	0	1	0	0	0	0	0	0	0	0	0
Illinois	9	5	7	6	7	2	3	1	5	2	6	2
Indiana	4	3	7	2	3	3	1	3	4	3	5	3
Iowa	4	2	4	0	5	2	0	2	4	1	3	2
Kansas	3	5	3	1	6	2	1	2	2	3	3	1
Kentucky	4	1	4	2	4	0	2	1	6	1	2	1
Louisiana	0	0	2	3	1	0	0	1	1	0	2	1
Maine	2	1	2	0	2	0	0	1	2	0	1	2
Maryland	5	5	7	2	6	2	2	2	7	2	4	2
Massachusetts	7	2	6	3	5	2	0	4	4	1	5	7
Michigan	7	4	4	4	6	1	1	1	7	5	6	1
Minnesota	5	1	8	6	6	1	1	2	5	0	3	1
Mississippi	3	1	1	2	2	1	1	0	0	0	3	0
Missouri	3	2	4	2	2	1	0	1	1	1	2	1
Montana	0	0	1	0	2	0	0	0	1	0	1	0
Nebraska	0	0	1	1	1	0	1	0	0	0	0	0
Nevada	2	0	1	0	0	0	0	0	1	0	1	0
New Hampshire	1	0	1	0	0	0	0	0	1	0	0	0
New Jersey	3	2	4	1	3	0	0	0	4	1	3	0
New Mexico	0	0	6	0	1	0	0	0		1	0	0
New York	21	14	30	16	18	10	6	6	14	3	6	5
North Carolina	7	4	6	3	7	1	1	2	7	2	2	3
North Dakota	0	0	0	0	0	0	0	0	1	0	0	1
Ohio	9	8	10	6	7	4	0	3	7	4	0	3
Oklahoma	2	0	0	0	0	0	2	2	1	0	4	0
Oregon	1	0	4	0	5	2	0	0	2	1	0	2
Pennsylvania	9	8	13	7	9	6	1	7	7	2	11	4
Rhode Island	0	0	0	0	1	2	0	0	2	0	2	0
South Carolina	0	1	3	0	2	1	0	0	0	0	2	0
South Dakota	0	0	0	0	0	0	0	0	0	0	0	0
Tennessee	1	0	1	0	0	0	1	0	0	0	0	0
Texas	10	6	17	7	9	5	2	3	12	1	11	4
Utah	4	3	3	2	2	0	0	1	1	0	0	0
Vermont	0	0	0	0	0	0	0	0	0	0	0	0
Virginia	7	4	8	5	8	6	0	2	5	5	6	2
Washington	0	1	7	2	6	2	0	0	4	1	4	1
West Virginia	1	1	1	0	0	0	0	0	2	0	0	0
Wisconsin	8	3	7	5	10	5	1	2	8	1	0	4
Wyoming	0	0	0	0	0	0	0	0	0	0	0	0
D.C.	5	5	9	2	8	0	2	63	11	1	5	6

TABLE 12

	Natural Science Curriculum	Physical Education Curriculum	Reading, Language Curriculum	Social Studies Curriculum	Other Curriculum (Gen. Prof.)	Engineering & Architecture Curriculum	Law Curriculum	Professional Teaching Curriculum	Other Professional Curriculum	Vocational Curriculum	Cooperative Educ. Curriculum	Career Curriculum	
Alabama	0	0	1	1	3	0	1	3	2	4			
Alaska	0	0	0	0	0	0	0	0	0	1			
Arizona	1	2	6	2	6	0	0	3	1	1			
Arkansas	0	0	0	0	0	0	0	0	1	0			
California	7	4	26	8	14	1	-	9	4	11			
Colorado	4	3	4	4	7	0	2	2	3	5			
Connecticut	1	2	5	3	1	0	1	3	1	2			
Delaware	1	0	2	2	1	1	0	1	0	1			
Florida	3	1	4	3	2	0	0	4	0	1			
Georgia	1	0	0	2	1	0	0	2	0	1			
Hawaii	1	0	1	1	1	1	0	0	1	0			
[redacted]	0	0	0	0	0	0	0	0	0	0			
Illinois	2	1	5	3	6	1	1	9	3	6			
Indiana	5	4	8	5	4	2	1	4	1	4			
Iowa	3	0	4	3	4	0	0	3	0	7			
Kansas	3	0	3	4	3	0	0	5	0	3			
Kentucky	1	2	4	3	2	0	0	3	0	4			
Louisiana	1	1	4	2	3	0	0	2	0	2			
Maine	0	0	0	0	0	0	0	2	1	3			
Marvland	1	2	4	1	2	0	0	1	2	3			
Massachusetts	2	2	4	4	3	2	1	5	1	7			
Michigan	2	4	6	2	6	1	0	5	2	7			
Minnesota	2	2	6	3	6	0	1	5	2	3			
Mississippi	0	0	1	1	3	0	0	2	0	5			
Missouri	2	2	4	3	3	0	0	3	1	7			
Montana	1	1	1	1	1	0	1	2	0	2			
Nebraska	0	0	2	0	2	0	0	2	1	0			
Nevada	0	1	1	0	1	0	0	0	0	1			
New Hampshire	0	0	0	0	1	0	0	0	0	0			
New Jersey	2	1	5	1	1	0	0	0	1	2			
New Mexico	0	0	0	0	0	0	0	0	0	0			
New York	10	5	23	14	14	2	1	21	12	21			
North Carolina	5	2	5	3	3	0	0	3	3	1			
North Dakota	0	0	0	0	1	0	0	1	0	2			
Ohio	7	5	8	5	11	0	0	9	4	9			
Oklahoma	0	0	1	0	2	0	0	0	1	2			
Oregon	1	1	4	2	1	0	0	1	1	5			
Pennsylvania	2	1	10	3	6	0	0	13	2	12			
Rhode Island	0	0	1	1	1	0	0	1	2	3			
South Carolina	1	1	2	2	2	0	0	1	1	0			
South Dakota	0	0	0	0	0	0	0	0	0	0			
Tennessee	0	0	1	1	1	0	0	0	0	0			
Texas	4	1	10	4	6	0	0	10	2	3			
Utah	0	0	3	3	1	0	1	4	3	3			
Vermont	0	0	0	0	0	0	0	0	0	0			
Virginia	1	1	8	1	5	0	0	4	3	5			
Washington	4	1	7	4	4	1	1	4	2	7			
West Virginia	0	0	0	0	5	0	0	1	1	2			
Wisconsin	0	1	2	2	3	0	0	3	3	8			
Wyoming	0	0	1	1	0	1	0	0	1	1			
	2	1	4	2	0	2	1	11	8	5			

with new proposals for ed. R&D. If an organization in Idaho requests funding for R&D in "instructing the physically handicapped," policymakers may look and see that Idaho has an organization already doing R&D in this area and has virtually no organizations performing R&D in a great variety of other areas. They might recommend that another educational R&D topic be considered instead.

These tables are also included to point out further to policymakers not only what types of R&D each state is engaged in but also how many organizations each state has working on particular educational concerns. One quick glance at Vermont or South Dakota's share in the "primary areas of education R&D" can be quite informative. Neither one of them has organizations involved in ed. R&D in any of these primary areas.

These tables may prove useful to policymakers interested in knowing which state is doing what kind of R&D and how much of this R&D it is doing.

In general, the areas mentioned by 30% or more of the mail questionnaire respodents as "primary topics" of education R&D work come under the headings of "evaluation, basic skills, special needs and administration." Table 13 presents interesting data on the sectors involved in the areas of R&D. This table if used along with the extensive list of "primary areas of education R&D" (Tables 8-12) can help policymakers get an even closer look at the ed. R&D in each state. Take, for instance, Pennsylvania. In Table 8 one sees that there are thirteen organizations

involved in research and development in the "instruction of the physically handicapped." In addition, if one looks then at Table 13, it can be seen that thirty-one percent of the respondents from the public sector indicated performing ed. R&D in this area. It can be inferred that a good many, if not most, of the education R&D organizations involved in R&D in "instructing the physically handicapped" are small organizations in the public sector. Policymakers interested in knowing what areas of ed R&D are receiving the most attention and in which sectors and in what states, can do so by putting these tables together.

III. A BRIEF GLANCE AT DEMAND

It is true that both New York and California have by far the greatest supply of education R&D resources. At the same time it is also true that these states each have one of the largest student populations in the country. In order to judge fairly what a state has and what its needs are, a policymaker must look at both the supply and demand of education R&D resources within the state. Without one, knowledge of the other helps policymakers little. Although the paper's intent is to look at the supply of education R&D, it would be incomplete if it did not at least discuss some of the determinants of the demand side and present some findings on its more outstanding elements.

What constitutes demand for education R&D is a tricky question to answer. One variable could be student scores on the National Education Assessment Exam. It could be argued that the state which contains the greatest

TABLE 13

AREAS MENTIONED BY 30 PERCENT OR MORE OF MAIL QUESTIONNAIRE RESPONDENTS AS "PRIMARY TOPICS" OF EDUCATION RDD&E WORK

Areas	Sector			
	Public - Small % [a]	Public - Large %	Private %	Academic %
Evaluation				
Project and Program Evaluation	69	73	53	45
Learning Outcomes	37	42	30	34
Tests & Measurements	-[b]	37	-	-
Teachers Performance	-	-	-	34
Basic Skills				
Reading, Language Arts Curriculum	56	49	-	-
Mathematics Curriculum	46	43	-	-
English and Speech Curriculum	30	-	-	-
Special Needs				
Of Mentally Handicapped	35	-	-	-
Of Emotionally Handicapped	32	31	-	-
[illegible]	[illegible]	-	-	-
Of Bilingual Students	-	35	-	-
Of Gifted and Talented	47	-	-	-
Administration				
Enrollment Analyses & Forecasting	43	44	-	-
Demographic Analyses	34	36	-	-
School Finance	-	37	-	-
Administration & Organization	-	43	34	-
Other Areas				
Vocational, Career & Cooperative Education	-	30	32	-
Teacher Education	-	-	32	37
Computers & Computer Use	30	-	-	-
Classroom Climate & Discipline	30	-	-	-
General Curriculum Development	44	34	-	-
Instructional Methods	-	-	-	33

[a] Percents based on responses from 1014 organizations (95% of mail respondents).

[b] Indicates that less than 30 percent of respondents mentioned area.

number of low-scoring students is in the most need for education R&D services. This argument is based on the assumption that education R&D will find a solution to the educational ills of a state rather than assuming, for instance, that the state has too few educational resources or that it is managing those that it has poorly. Other variables may include the number of low-income families a state has or the demographic character of the state--whether there is a concentration of students with special needs, a target population (e.g., physically handicapped, minority students). There is a whole host of factors that together can constitute a demand function.

Every state should, in fact, have some demand for educational R&D. The question that should be addressed is which state is most in need for ed. R&D given the resources it already has. Variables that can be used to assess a state's ed. R&D capability include the number of school districts it has and the number of students enrolled in the schools. The statistics on school enrollment will include only elementary and secondary schools for they are what most ed. R&D focuses on.

Tables fourteen and fifteen provide information on the number of students, ages five through seventeen, enrolled in either primary or secondary schools in each state. The following chart indicates the student population of each state as well as the number of organizations each state has. (The data was collected in a 1979 NEA survey).

STATE	STUDENT POPULATION (in 1,000's)	# OF ORGS.
1. X>3 million		
California	4,663	235
Texas	3,931	105
New York	3,001	264
2. 2 million <X< 3 million		
Pennsylvania	2,610	100
Illinois	2,570	100
Ohio	2,467	137
Michigan	2,194	96
3. 1 million<X<2 million		
Florida	1,687	76
New Jersey	1,651	41
Massachusetts	1,285	86
North Carolina	1,257	47
Indiana	1,250	58
Georgia	1,199	55
Virginia	1,160	45
Wisconsin	1,097	59
Missouri	1,058	47
4. 800 thousand<X<1 million		
Louisiana	986	25
Maryland	964	46
Tennessee	963	36
Minnesota	940	51
Alabama	866	50
Washington	820	48
5. 500,000 < X <800,000		
Kentucky	795	26
Connecticut	694	25
South Carolina	690	28
Iowa	662	41
Oklahoma	608	29
Mississippi	604	15
Colorado	591	56
Arizona	568	26
Oregon	513	42
Kansas	502	29

An analysis which looks only at the ratio of the number of students to the number of organizations is overly simplistic and somewhat misleading. For one thing, there is no indication of the differing sizes of the organizations and their differing funding levels. Secondly, there is no

Total Enrollment and Population by State

REGION AND STATE	POPULATION [illegible] OF AGE, [illegible] SAMOS)	1977-78 (REVISED) FALL ENROLLMENT ELEMENTARY	SECONDARY	TOTAL	PERCENT ENROLLMENT IS OF POPULATION 5-17 YEARS	POPULATION 5-17 YEARS OF AGE, JULY 1, 1978 (IN THOUSANDS)	1978-79 FALL ENROLLMENT ELEMENTARY	SECONDARY	TOTAL	PERCENT ENROLLMENT IS OF POPULATION 5-17 YEARS
1	2	3	4	5	6	7	8	9	10	11
50 STATES AND D.C.	[illegible]	24.993.230	18.751.729	43.744.959	89.2	48.160	24.403.027	18.375.337	42.778.364	88.8
NEW ENGLAND	[illegible]	1.422.583	1.042.191	2.464.774	89.6	2.684	1.366.194	1.036.814	2.403.008	89.5
CONNECTICUT	[illegible]	416.789	199.620	616.389	88.8	676	396.250	196.900	593.150	87.7
MAINE	253	165.644	74.029	239.673	94.7	250	162.550	75.730	238.280	95.3
[illegible]	[illegible]	583.070	581.700	1.164.770	90.6	1.244	565.000*	570.000*	1.135.000*	91.2*
NEW HAMPSHIRE	198	104.632	69.986	174.618	88.2	198	102.500	72.150	174.650	88.2
RHODE ISLAND	209	90.911	75.479	166.390	80.4	203	79.104	81.274	160.378	79.0
VERMONT	116	61.557	41.377	102.934	90.3	113	60.790	40.760	101.550	89.9
MIDEAST	[illegible]	4.052.786	3.744.943	7.797.729	82.7	9.147	3.890.070	3.678.532	7.568.602	82.7
DELAWARE	115	57.967	60.033	118.000	87.4	131	53.041	57.993	111.034	84.8
[illegible]	904	421.466	415.341	836.807	86.8	936	403.630	408.480	812.110	86.8
[illegible]	[illegible]	861.811	519.717	1.381.528	83.7	1.601	834.500	511.500	1.346.000	84.1
NEW YORK	[illegible]	1.591.179	1.620.670	3.211.849	81.7	3.803	1.524.700	1.602.900	3.127.600	82.2
PENNSYLVANIA	[illegible]	1.054.040	1.074.833	2.128.873	81.6	2.537	1.012.100	1.045.900	2.058.000	81.1
DIST. OF COLUMBIA	[illegible]	66.323	54.349	120.672	85.0	139	62.099	51.759	113.858	81.9
SOUTHEAST	[illegible]	5.871.111	4.191.702	10.062.813	90.6	10.990	5.831.206	4.129.184	9.960.390	90.6
[illegible]	[illegible]	382.556	366.764	749.320	86.5	860	369.100	384.100	753.200	87.6
ARKANSAS	[illegible]	251.712	230.127	481.839	99.3	482	241.178	215.520	456.698	94.8
[illegible]	[illegible]	777.388	756.653	1.534.041	90.9	1.653	771.991	753.549	1.525.540	92.3
[illegible]	[illegible]	655.606	431.807	1.087.413	90.7	1.191	649.748	438.088	1.087.836	91.3
KENTUCKY	[illegible]	438.167	256.132	694.299	87.3	782	441.712	251.287	692.999	88.6
[illegible]	[illegible]	447.163	388.091	835.254	84.7	973	447.000	381.000	828.000	85.1
MISSISSIPPI	[illegible]	279.816	224.693	504.709	83.6	602	271.899	219.537	491.436	81.6
[illegible]	[illegible]	823.221	370.543	1.193.764	95.0	1.249	807.470	370.502	1.177.972	94.3
SOUTH CAROLINA	[illegible]	380.588*	240.135	620.723	90.0	683	428.682	196.249	624.931*	91.5
[illegible]	[illegible]	538.644	339.584	878.232	91.2	957	526.318	344.500	870.818	91.0
[illegible]	[illegible]	662.072	420.112	1.082.184	93.3	1.150	642.590	412.648	1.055.238	91.8
WEST VIRGINIA	[illegible]	234.174	166.461	401.035	98.1	408	233.518	162.204	395.722	97.0
GREAT LAKES	[illegible]	4.862.123	3.592.669	8.454.792	88.3	9.391	4.715.122	3.493.996	8.209.118	87.4
ILLINOIS	[illegible]	1.461.626	722.110	2.183.736	85.0	2.575	1.410.426	696.889	2.107.315	81.8
[illegible]	[illegible]	585.415*	559.459	1.144.874	91.6	1.229	575.345*	555.319	1.130.664	92.0
MICHIGAN	[illegible]	1.034.895	996.203	2.031.098	92.6	2.137	1.016.784	961.336	1.978.120	92.6
OHIO	[illegible]	1.278.689	898.532	2.177.221	88.3	2.409	1.228.150	878.450	2.106.600	87.4
[illegible]	[illegible]	501.498	416.365	917.863	83.7	1.041	484.417	402.002	886.419	85.2
PLAINS	[illegible]	1.901.766	1.473.337	3.375.103	88.1	3.726	1.842.989	1.427.078	3.270.067	87.8
IOWA	[illegible]	306.345	282.415	588.760	88.9	664	296.150	272.983	569.133	88.4
KANSAS	[illegible]	266.527	180.065	446.592	89.3	492	261.414	176.466	437.880	89.0
[illegible]	[illegible]	401.397	433.169	834.566	88.4	907	388.375	416.460	804.835	88.7
[illegible]	[illegible]	614.938	316.294	931.232	88.0	1.033	593.923	306.079	900.002	87.1
NEBRASKA	[illegible]	160.566	144.771	305.337	86.5	346	155.120	143.180	298.300	86.2
NORTH DAKOTA	[illegible]	58.105	66.980	125.085	81.2	148	57.570	64.119	121.689	82.2
SOUTH DAKOTA	[illegible]	93.688	49.643	143.531	89.1	156	90.437	47.791	138.228	88.6
SOUTHWEST	[illegible]	2.371.188	1.917.239	4.288.427	95.7	4.471	2.381.219	1.920.122	4.301.341	96.2
ARIZONA	[illegible]	383.715	171.987	555.702	97.8	573	386.700	173.300	560.000	97.7
NEW MEXICO	[illegible]	142.872	139.024	281.896*	93.3	299	144.019	135.322	279.341*	93.4
OKLAHOMA	[illegible]	320.427	274.041	594.468*	97.8	604	318.000	274.000	592.000*	98.0
TEXAS	[illegible]	1.524.174	1.332.187	2.856.361	95.2	2.995	1.532.500	1.337.500	2.870.000	95.8
ROCKY MOUNTAINS	[illegible]	743.091	598.532	1.341.623	97.1	1.387	753.551	594.567	1.348.118	97.2
COLORADO	[illegible]	303.366	258.441	561.807	95.1	587	300.500	259.500	560.000	95.4
IDAHO	[illegible]	105.591	95.842	201.433	98.7	205	108.744*	94.278*	203.022*	99.5*
MONTANA	[illegible]	111.843	56.887	168.730	97.0	174	113.500	55.800	166.300	95.6
UTAH	[illegible]	173.486	143.346	317.332	99.5	326	182.366	142.102	324.468	99.3
WYOMING	[illegible]	48.805	43.516	92.321	98.2	95	51.441*	42.887	94.328	99.3
FAR WEST	[illegible]	3.629.037	2.067.849	5.696.886	92.7	6.043	3.484.054	1.974.179	5.458.233	90.3
CALIFORNIA	[illegible]	2.887.100*	1.416.565	4.303.665	92.3	4.583	2.742.177	1.328.823*	4.071.000	88.8
NEVADA	[illegible]	71.441	72.340	143.781	97.8	148	73.222	73.059	146.281	98.8
OREGON	[illegible]	275.259	197.718	472.977	92.2	508	273.800	199.700	471.500	93.2
[illegible]	[illegible]	395.237	381.226	776.463	94.7	804	394.855	372.597	767.452	95.5
ALASKA	[illegible]	49.441	41.190	90.631	80.2	118	49.286	40.105	89.391	75.8
HAWAII	[illegible]	90.104	82.077	172.181	84.0	203	89.336	80.760	170.096	83.8

*NEA Estimates.
•See footnotes, page 25.

KEY: 1) greater than 3 million students
2) between 2 million & 3 million
3) between 1 million & 2 million
4) between 800 thousand & 1 million
5) between 500 thousand & 800 thousand

TABLE 15

No. 221. School Enrollment—Elementary, Secondary, and Institutions of Higher Education, by States and Other Areas: 1975 to 1978

(In thousands. As of fall of year. For grade levels, see headnote, table 210. Data for nonpublic elementary and secondary schools not revised; for revised U.S. totals, see table 210. See also Appendix III)

State or other area	Elementary [1]				Secondary [1]				Higher education [2]			
	Public		Nonpublic [3] [4]		Public		Nonpublic [4]		Public		Nonpublic	
	1975	1978 [5]	1975	1977	1975	1978 [5]	1975	1977	1975	1978 [5]	1975	1978 [5]
United States	30,545	28,800	3,400	2,796	14,294	14,100	1,200	965	[6] 9,335	[6] 9,754	2,330	2,429
New England	1,749	1,645	239	153	807	778	126	102	372	361	136	142
Maine	172	163	10	7	79	78	3	7	31	30	9	11
New Hampshire	120	117	17	3	54	54	3	6	24	22	17	18
Vermont	73	70	6	3	31	31	6	4	17	18	12	12
Massachusetts	[7] 813	777	121	78	385	365	50	46	174	165	211	215
Rhode Island	121	110	24	18	55	53	9	7	32	33	32	27
Connecticut	450	408	61	46	203	197	37	32	94	93	55	59
Middle Atlantic	4,760	4,362	1,007	789	2,345	2,289	348	271	1,129	1,057	643	666
New York	[7] 2,281	2,062	497	385	1,120	1,106	173	121	514	542	391	407
New Jersey	[7] 998	940	180	142	460	454	55	42	225	206	69	[8]
Pennsylvania	1,481	1,360	330	263	765	729	120	96	390	309	183	[8]
East No. Central	5,969	5,520	398	600	2,356	2,279	293	211	1,568	1,632	383	391
Ohio	1,535	1,424	212	184	757	717	75	63	337	349	99	[8]
Indiana	851	750	75	50	375	372	21	14	159	168	54	[8]
Illinois	1,559	1,419	300	201	731	720	98	60	444	481	140	149
Michigan	1,419	1,357	171	126	664	648	95	57	437	424	90	[8]
Wisconsin	625	570	136	130	339	330	34	20	211	210	60	[8]
West No. Central	2,315	2,161	278	225	1,138	1,154	73	73	611	621	175	191
Minnesota	573	522	83	63	307	299	22	16	149	145	36	43
Iowa	408	377	46	39	204	201	18	16	84	88	35	39
Missouri	646	602	82	83	316	312	11	23	159	152	65	67
North Dakota	84	78	8	7	48	45	3	2	28	30	2	2
South Dakota	100	92	9	6	51	49	3	2	22	21	8	8
Nebraska	210	197	28	23	105	103	12	10	61	67	13	15
Kansas	294	293	24	13	154	145	5	3	108	118	13	14
South Atlantic	4,900	4,674	281	247	2,201	2,180	114	83	1,242	1,285	306	326
Delaware	84	75	12	10	43	41	5	5	27	29	5	6
Maryland	607	550	77	65	274	271	28	23	177	187	29	33
Dist. of Col	94	84	12	11	36	34	9	5	15	14	69	71
Virginia	739	719	40	28	344	343	20	10	213	236	29	32
West Virginia	283	278	7	7	121	118	4	3	58	67	11	11
North Carolina	813	799	20	13	387	380	5	3	201	208	20	19
South Carolina	443	413	22	11	196	196	5	3	105	102	25	[8]
Georgia	751	744	19	17	340	325	10	5	143	136	31	34
Florida	1,061	1,014	72	85	490	492	29	27	298	311	57	65
East So. Central	1,977	1,918	135	96	863	867	63	37	481	484	91	95
Kentucky	475	470	41	43	217	214	15	16	105	108	20	23
Tennessee	628	598	20	19	261	267	11	13	140	149	42	43
Alabama	520	514	37	20	219	233	13	4	146	140	19	21
Mississippi	356	339	37	12	156	153	24	4	90	87	10	10
West So. Central	3,309	3,211	194	185	1,401	1,434	65	53	854	886	134	137
Arkansas	317	310	8	7	139	140	3	2	55	61	9	[8]
Louisiana	592	563	94	84	255	258	33	27	132	129	21	22
Oklahoma	408	395	3	[8]	198	188	3	3	124	127	22	23
Texas	1,992	1,941	94	84	809	845	25	22	542	569	82	84
Mountain	1,532	1,516	71	68	709	723	25	19	517	520	64	66
Montana	115	109	7	4	57	57	3	2	28	33	3	3
Idaho	133	134	4	3	63	64	2	1	31	33	5	5
Wyoming	59	62	2	2	29	29	(Z)	(Z)	18	20	–	–
Colorado	384	387	24	15	185	184	5	6	136	137	13	14
New Mexico	183	185	9	11	91	92	3	3	48	52	4	4
Arizona	[7] 350	351	20	24	143	153	7	5	169	172	5	5
Utah	212	215	3	2	97	96	1	1	57	55	31	34
Nevada	96	73	2	4	44	48	1	1	30	33	(Z)	(Z)
Pacific	4,030	3,793	238	332	1,919	1,896	89	110	2,007	1,917	214	220
Washington	530	507	30	25	253	256	12	8	203	248	25	25
Oregon	321	310	17	13	156	154	6	5	130	127	15	17
California	2,993	2,801	237	277	1,427	1,404	66	92	1,618	1,476	170	174
Alaska	65	62	(Z)	1	25	27	(Z)	(Z)	13	23	1	(Z)
Hawaii	121	113	14	16	58	56	6	5	43	43	3	4
Other areas [9]	524	563	46	(NA)	247	172	19	(NA)	62	60	44	75
Puerto Rico	467	509	38	(NA)	230	156	16	(NA)	53	49	44	72
Guam	21	21	3	(NA)	7	7	1	(NA)	4	3	–	–
Virgin Islands	20	20	3	(NA)	5	5	1	(NA)	2	2	–	–

– Represents zero. NA Not available. Z Less than 500. [1] Excludes data for private residential schools for exceptional children and subcollegiate departments of higher education. [2] Estimated.
[3] Elementary includes middle schools. [4] Excludes combined elementary and secondary schools.
[5] See headnote, table 207. [6] Includes U.S. military academies, not shown separately. [7] Includes [illegible]
Samoa, Guam, Trust Territories of the Pacific Islands.

mention of the variety of different students and the special needs of some. Thirdly, it pays no attention to the location of the organizations--a factor which helps determine the number and type of students served. What such a ratio does is give policymakers a rough idea of what number of ed. R&D resources, no matter how large or small, are available in each state. Texas, for instance, has one hundred and five R&D organizations and a student population of over three million. Theoretically, every organization is responsible for about 29,000 students in the state. Map 2 suggests that Texas has a good many (between six or nine) organizations with yearly expenditures of over a million dollars. California, on the other hand, has a student population of close to 4,700,000 and 235 organizations to serve its needs. It has, in theory, an R&D organization for every 20,000 students. In addition, it has (Map 2) an even greater number of one million dollar a year ed. organizations than does Texas. It appears that California's supply of education R&D comes a little closer to meeting its demand for such resources than does Texas.

Looking at both Map 1 and Map 2 and at the student population figures, one can get some idea of what R&D resources are available in each state. Illinois has a hundred organizations within it and a student population of 2,570. Each organization, then, theoretically is responsible for about 26,000 students. In addition, Map 2 indicates that Illinois is one of three states in the country which has ten or more organizations spending one or more million dollars a year on education R&D. Illinois seems to be better off in terms of its R&D resources than is Louisiana, for example. Louisiana has one quarter of the number of organizations

Illinois has and about two-fifths of the number of students than Illinois. Each organization has almost forty thousand students to serve in contrast to Texas' ration of having one organization for every twenty-nine thousand students. Louisiana (as Map 2 points out), unlike Illinois with its rich supply of funds, has no organizations spending one million dollars or more for education R&D a year. Simple comparisons like these can assist policymakers with their choice of which states to allocate R&D funds to.

Another method of calculating a state's need for education R&D is to take into account the number of school districts in each state. The advantage of using these data is that R&D organizations usually cater directly to school districts, rather than "numbers of students." A disadvantage of this method of analysis is that often the number of school districts in a state is not in proportion to the number of students. Table 16 indicates that Nebraska had in the Fall of 1977, 1,138 public school districts. Table 14 points out that Nebraska has a student population of 353,000. California, on the other hand, has fewer school districts than does Nebraska but has over thirteen times the number of students. For this reason, a variable which describes the number of students in a state instead of the number of school districts in it is a much more reliable one to use to assess the needs of a state.

The purpose of presenting these tables and figures concerning education R&D in each state is two-fold. It is first designed to provide policy-makers with information on the supply of R&D resources in each state and it is, second, intended to assist policymakers in their assessment of the

TABLE 16

Number of public school districts, by State and outlying area: United States, Fall 1976 and Fall 1977

State or other area	Fall 1976			Fall 1977			Decrease in total number of districts (plus (+) denotes increase)
	Total	Operating	Non-operating	Total	Operating	Non-operating	
1	2	3	4	5	6	7	8
TOTAL 50 STATES AND D.C.	16,271	15,948	323	1/16,211	1/15,889	1/322	60
Alabama	127	127	—	127	127	—	—
Alaska	2/52	2/52	—	52	51	—	1
Arizona	131	249	2	234	232	2	17
Arkansas	3/385	3/383	2	1/386	3/383	2	—
California	1,042	1,042	—	1,046	1,044	—	+2
Colorado	181	181	—	4/203	4/203	—	4/+22
Connecticut	177	167	10	1/177	1/167	1/10	—
Delaware	26	26	—	26	26	—	—
District of Columbia	1	1	—	1	1	—	—
Florida	67	67	—	67	67	—	—
Georgia	188	188	—	188	188	—	—
Hawaii	1	1	—	1	1	—	—
Idaho	115	115	—	115	115	—	—
Illinois	1,029	1,025	4	1,030	1,025	5	+1
Indiana	305	304	1	305	304	1	—
Iowa	449	449	—	449	449	—	—
Kansas	307	307	—	307	307	—	—
Kentucky	181	181	—	181	181	—	—
Louisiana	66	66	—	66	66	—	—
Maine	279	222	57	1/279	1/222	57	—
Maryland	24	24	—	24	24	—	—
Massachusetts5/	410	366	44	409	357	52	1
Michigan	581	577	4	581	580	1	—
Minnesota	440	439	1	440	439	1	—
Mississippi	150	150	—	152	152	—	+2
Missouri	562	559	3	558	556	2	4
Montana	614	579	35	1/584	1/570	1/26	18
Nebraska	1,109	1,120	47	1,138	1,091	47	29
Nevada	17	17	—	17	17	—	—
New Hampshire	168	157	11	168	157	11	—
New Jersey	610	593	17	610	590	20	—
New Mexico	88	88	—	88	88	—	—
New York	745	737	8	744	737	7	1
North Carolina	145	145	—	145	145	—	—
North Dakota	344	312	32	341	308	33	3
Ohio	617	617	—	616	616	—	1
Oklahoma	623	623	—	623	623	—	—
Oregon	334	332	2	333	329	4	1
Pennsylvania5/	505	504	1	505	504	1	—
Rhode Island	40	40	—	40	40	—	—
South Carolina	92	92	—	92	92	—	—
South Dakota	196	196	—	196	195	—	1
Tennessee	147	147	—	148	148	—	+1
Texas	1,123	1,116	7	1,117	1,107	6	10
Utah	40	40	—	40	40	—	—
Vermont	274	246	28	274	246	28	—
Virginia	141	134	7	139	136	5	—
Washington	303	301	2	302	301	1	1
West Virginia	55	55	—	55	55	—	—
Wisconsin	436	436	—	436	436	—	—
Wyoming	51	51	—	51	51	—	—
OUTLYING AREAS:							
American Samoa	1	1	—	2	1	—	—
Canal Zone	1	1	—	2	1	—	—
Guam	1	1	—	2	1	—	—
Puerto Rico	1	1	—	2	1	—	—
Virgin Islands	1	1	—	2	1	—	—
DOD Overseas Schools	N O R E P O R T			2	1	—	—
Trust Territory of the Pacific Islands	N O R E P O R T						

1/ Revised from previously published data.
2/ Data for columns 2 and 3 include all operating school districts in the State consisting of 31 city and borough school districts and 21 regional educational attendance areas formerly operated by the State. The latter were not included in fall 1975 data.
3/ Does not include the Arkansas Department of Correction which by law is recognized as a school district for aid purposes.
4/ Data for fall 1977 reflect an increase of 22 Boards of Cooperative Service over the total number of school districts reported in fall 1976.
5/ Data does not include 13 operating and 7 nonoperating regional vocational education school systems.
6/ In those instances where two or more districts have organized into joinctures for purposes of operating schools, the larger unit (jointure) is the administrative unit counted here. Does not include districts operating vocational technical programs and special education programs.

needs of each state. In addition to equipping policymakers with data on the supply and demand functions of individual states, it permits policymakers to compare and contrast the educational R&D capability of the state with that of another. Unfortunately, one of the most important datum needed, reliable information on the funding levels of each state, is not available.

IV. REGIONAL REVIEW

NIE's Task Force on Nationwide R&D is considering establishing additional federally-sponsored ed. R&D labs in the few regions which presently have none. These unserved regions include the Southeastern states of Florida, Georgia, South Carolina and North Carolina and the Northeastern states of New York, Connecticut, Massachusetts, New Hampshire, Rhode Island, and Vermont. In addition, NIE is thinking of splitting the large CEMREL, Inc. region in half--having Illinois, Indiana, Ohio, Kentucky and Tennessee in one region and Minnesota, Wisconsin, Iowa and Michigan in the other. Most everyone who responded to NIE's circular asking for views on the issue of adding more ed. labs was in favor of doing so.

There were few respondents who expressed reservations about the possibility of establishing more regional labs or who adamently opposed such a policy. The Commissioner of the State Department of Education in Tallahassee, Florida expressed his view about NIE forming a regional lab in the Southeast in a letter to the Task Force dated April 30, 1980. Here Ralph Turlington says the following, "As you know, Florida and nine

other Southeastern states have combined, along with NIE's help, to establish the Southeastern Regional Council for Educational Improvement. We're very excited about the prospects of the new Council for serving the educational needs of our ten states, and we believe that the Council offers the kind of institutional atlernative to regional labs and centers which you refer to in your letter... The issue of whether a new lab or center for the Southeastern region is now appropriate may be a moot point. At issue instead may be deciding how NIE and the Southeastern states can best work as partners to help out new Council meet its challenges." Luther L. Kiser, an Assistant Superintendent for Curriculum and Instruction in the Ames Community School District also casts a "no" vote on the question of whether or not to create more ed. R&D labs. "I'm strongly opposed," he says, "to the establishment of new regional R&D labs. If you are still reading after that first sentence, I'll try to explain my beliefs. National dissemination to a local problem and awareness is more important to a person in the field looking for a solution to a local problem than having easy access to someone who wants to put together a project proposal... The farmer who told the extension agent that he didn't need any of his research findings because, "I already know how to farm better than I do!" really wasn't trying to be humorous. NIE might provide greater service by establishing Implantation Centers rather than R&D Centers."

What one's view is of the effectiveness of regional education R&D labs is very important: If a policymaker feels that there is no substitute

for an educational lab, that the effectiveness of ed. R&D in a University is significantly less than that of a lab-- or that the R&D there serves a different purpose, or is of a different nature-- then he/she will advocate a system where there is a lab in every region of the country. If, on the other hand, a policymaker believes that ed. R&D labs are not unique-- that other ed. R&D organizations perform similar functions and share similar purposes, then he/she is more inclined to determine how needs are being met without the lab before considering establishing one. The data presented in this paper are designed for use by the latter mentioned policymaker for only he/she will base a decision partially on a supply/demand analysis. The former policymaker starts with the premise that regional R&D labs are unique and therefore believes that existing ed. R&D resources have no bearing on the issue of supplying additional ed. R&D.

One way of determining whether or not a region needs additional funds for education R&D or, perhaps, needs a federally-sponsored ed. R&D laboratory is to see how much funding it is receiving already and how its level of funding compares to that of other regions. In addition, a policymaker needs to know how many students each region has and whether the work of existing education R&D organizations is being disseminated. Since there currently is no reliable information on the funding of ed. R&D in each state, a different variable will be used instead. Table 17 provides information on both the number of students in each region and the number (not size) of organizations available to provide education R&D services.

TABLE 17

	Number of Students (1000's)	Number of Orgs.
NWREL		
Washington	820	48
Oregon	513	42
Montana	174	12
Idaho	204	7
Hawaii	205	1
Alaska	113	4
TOTAL	2,029	114
MCREL		
N. Dakota	154	6
S. Dakota	161	10
Wyoming	94	5
Nebraska	353	23
Colorado	591	56
Kansas	502	29
Missouri	1,058	47
TOTAL	3,675	176
CEMREL		
(1) Minnesota	940	51
Wisconsin	1,097	59
Iowa	662	41
Michigan	2,194	96
SUBTOTAL	4,893	247
(2) Illinois	2,570	108
Indiana	1,250	58
Ohio	2,467	139
Kentucky	795	26
Tennessee	963	36
SUBTOTAL	8,045	367
TOTAL	12,938	614
RBS		
Pennsylvania	2,610	100
New Jersey	1,651	41
TOTAL	4,261	141

	Number of Students (1000's)	Number of Orgs.
SEDL		
N. Mexico	302	13
Oklahoma	608	29
Texas	3,001	105
Arkansas	485	8
Louisiana	986	25
Mississippi	604	15
TOTAL	5,986	195
SWRL		
Arizona	568	26
California	½(4,663)	235/2
Nevada	¾(147)	(¾)5
Utah	319	35
TOTAL	3,292	182.25
FWL		
California	4,663/2	235/2
Nevada	(¾)147	(¾)5
Utah	319	35
TOTAL	2,760	156
AEL		
Alabama	866	50
W. Virginia	409	18
Virginia	1,160	45
TOTAL	2,435	113
REGION 1		
Minnesota	940	51
Iowa	662	41
Wisconsin	1,097	59
Michigan	2,194	96
TOTAL	4,893	247

	Number of Students (1000's)	Number of Orgs.
REGION 2		
Illinois	2,570	108
Indiana	1,250	58
Ohio	2,467	139
Kentucky	795	26
Tennessee	963	36
Missouri	1,058	47
TOTAL	9,103	414
REGION 3		
N. Carolina	1,257	47
S. Carolina	690	28
Georgia	1,199	55
Florida	1,687	76
TOTAL	4,833	206
REGION 4		
New York	3,931	264
Vermont	114	5
N. Hampshire	198	7
Maine	253	8
Massachusetts	1,285	86
Connecticut	694	25
Rhode Isl.	207	11
TOTAL	6,682	406

RATIO OF # OF STUDENTS (1000's) TO # OF ORGANIZATIONS

		RBS	30/1
NWREL	18/1	FWL	18/1
MCREL	21/1	AEL	22/1
CEMREL	21/1	REGION 2	20/1
REGION 1			
CEMREL 1	20/1	REGION 3	22/1
CEMREL 2	22/1	REGION 4	24/1
SEDL	31/1	SWRL	18/1

NIE FUNDING FY'80 (Million)

NWREL	$3.308	RBS	2.632
MCREL	$ .741		
CEMREL	$2.699		

SEDL	$1.65 Million
SWRL	$2.047 Million
FWL	$2.75 Million
AEL	$1.668 Million

The ratio of the number of students to the number of organizations in each region is mentioned in Table 17 as well. It is interesting to note that almost all of the regions (including the proposed new ones) have about the same ratio (e.g., between eighteen and twenty-one thousand students for each education R&D organization). The SEDL education R&D lab region (New Mexico, Oklahoma, Texas, Arkansas, Louisiana, Mississippi), second only to CEMREL in student population, has by far the largest ratio of students to education R&D organizations. SEDL has about thirty-one thousand students for each education R&D lab.

There are a number of problems with using such a ratio. For one thing, there is no mention of the size of the organizations and their level of funding. The SEDL region, for instance, might have only 195 organizations to meet the needs of almost six million students but these 195 organizations may be quite large and capable of doing so. Secondly, there is a great assumption being made when one looks at the number of organizations in a "region." It is the assumption that organizations are sharing their resources and are disseminating their findings throughout all of the states in the region. One might argue, after viewing the status of education R&D in each region, that funds be used to help coordinate all the activities of the different organizations rather than to add new organizations to the region.

Table 17 can also be used by the policymaker who feels that regional labs should be established irrespective of the existing education R&D resources. The CEMREL region has without question the greatest number

of students to serve. The entire region has close to twelve million students enrolled in elementary and secondary schools. Even if the CEMREL region were broken up in the manner NIE is considering, with Minnesota, Wisconsin, Iowa and Michigan in one half and Illinois, Indiana, Ohio, Kentucky, Tennessee in the other, the student population of each would be 4,893,000 and 8,045,000 respectively. For FY '80, NIE is funding this entire region with only $2.699 million while the region of the Far West Lab, with a total of 2,760 students (a sixth of CEMREL's) is getting well over two million dollars a year. Even if the policymaker views the function of a regional ed. lab as being unique, this discrepancy in funding the labs seems, at best, awkward.

An even closer look at the present funding practices of NIE brings about some startling findings. The Northwest Regional Ed. Lab, which has about two million students within its region, is receiving for FY'80 over three million dollars in funding. MCREL, on the other hand, a region that encompasses some 3,675,000 students in the primary and secondary grades is receiving from NIE a much smaller figure-- only about $.741 million dollars. If policymakers wish to treat regional laboratories as special or even as unique kinds of education R&D organizations, then some more equitable from of funding the regions should be implemented.

Policymakers may also choose to treat education R&D labs as another type of R&D organization and may determine the composition of regions and their level of funding for each by looking at the number of organizations

each has already and the number of students each needs to serve. Using this method of analysis (and Table 17), policymakers may decide that all region 4 needs is an organization to coordinate the activities rather than adding another R&D facility to the system.

V. EQUITY CONSIDERATIONS

What has been presented has been a great number of facts. There is discussion about the state of education R&D in the nation as a whole-- what the most common areas of research are, the composition of the staffs, the size of organizations and their funding levels. There is a breakdown of education R&D by state and a look at what each state's capability is like. In addition there is a brief analysis of the different lab regions-- how many students they have, what other sources of education R&D are available and what the current funding levels are. Knowledge of these facts should help policymakers somewhat with their decisionmaking.

A value judgment is a component of any policy decision. Now that the facts are known, what kind of system does one want to establish? Equity in funding regional laboratories can take a number of forms. One can establish a weighted pupil system where the needs of each region are determined by the number of special students it has. New York, for instance, has a tremendous population of handicapped students and the method of educating the handicapped is far from perfect. Should New York then be entitled to a greater amount of funding for education R&D since it has this "target population"? One policy of funding regions can be to

provide unequal monies for unequal needs. The problem with this method is to choose what needs are more pressing than others (e.g., that funds are needed more for R&D in educating the handicapped in New York than R&D in bilingual education in Texas). Policymakers can also choose to simply give each region a level of funding based solely on the number of students it has to serve. A certain "foundation" level could be established. For example, one can say that every region should have at least "x" number of dollars devoted for education R&D for every "y" students.

There are many different possible ways of determining funding levels for education R&D. One of the most difficult but at the same time equitable ways of funding education R&D is to attempt to match the supply of ed. R&D to the demand for ed. R&D in each region. And if funds are too few to enable each region to have these functions meet, the funds may be allocated so that each region is equally as far away from reaching its equilibrium point as the next region is from having its supply meet its demand. Few conclusions are drawn in this paper. These are left to the policymakers who are mentioned so often. To them this whole collection of facts and data on the condition of ed. R&D is directed.

I owe a great deal of thanks to the many people who assisted me this summer. First, I would like to extend my appreciation to Jon Schaffarzick, Chairman of the Task Force on Nationwide R&D, who not only provided the most important service-- that of employing me-- but who also provided much of the data, background material and guidance that I needed. And even more importantly, I learned an important lesson from working with Jon Schaffarzick: that there still are intelligent, hard-working and dedicated people in Public Service.

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FOOTNOTES

[1]Education Research and Development in the United States, U.S. Dept. of Health, Education and Welfare, Office of Education, National Center for Education Research and Development. December 1969.

[2]The Configurational Perspective: A New View of Educational Knowledge Production and Utilization, David L. Clark and Guba G. Egon, Council for Educational Development and Research, Inc. Washington, D.C. November 1974.

[3]Performers of Research and Research-Related Activities in the Field of Education, Joanne Frankel, Laura M. Sharp and Albert Biderman, Bureau of Social Science Research, Washington, D.C. January 1979. p.114.

[4]Ibid. Performers of Research and Research-Related Activities in the Field of Education.

[5]Opcit. Performers of Research and Research-Related Activities in the Field of Education.

[6]R&D System Studies: Technical Report #1, "1975 Federal Funding for Education Knowledge Production and Utilization: A Composite Estimate by Agency Using Four Data Bases," Carnot E. Nelson, William M. Sowers and Ward Mason, R&D System Support Division, Dissemination and Resources Group/ NIE. February, 1977.

[7]For an analysis of the NAS data base, see Federal Support for Education Research and Related Activities FY 1975-1977-- Preliminary Report, Ward Mason and Bruce Craig. NIE. Washington, D.C. 1976.

[8]Toward Interagency Coordination: FY'75 Federal R&D Activities Pertaining to Early Childhood-- 5th Annual Report, Thomas W. Hertz and Ada Mann, Social Research Group, G.W.U. Washington, D.C. 1975 ERIC ED121467.

[9]Databook: "The Status of Education Research and Development in the U.S.," NIE, U.S. Department of HEW, Washington, D.C. 1976.

[10]The Federal Government and Educational R&D, Richard A. Dershimer, Lexington Books, D.C. Heath and Co. Lexington, Massachusetts. 1976.

[11]Journal of Research and Development in Education, Volume 3, No. 2, Winter. College of Education, University of Georgia, Athens, 1970.

[12]Ibid. Education Research and Development in the United States.

[13]Federal R&D Funding by Budget Function, Fiscal Years 1979-1981. Division of Science Resource Studies, National Science Foundation. May 1980.

[14]The Use of Social Research in Federal Domestic Programs, Part II, "The Adequacy and Usefulness of Federally Financed Research in Major National Social Problems," Washington, D.C. USGPO, 1967. p.113.

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